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BAXTER T. SMELZER, M. D.	-	-	-			<i>As Secretary of the Board</i>
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CONTENTS

	PAGE
Report of the Board.....	1-17
Financial report.....	21-28
Plans of sewerage and sewage disposal:	
Western House of Refuge for Women, Albion	31
Village of Dolgeville	31-35
Village of Depew	36-37
Village of New Rochelle.....	38-40
Village of Larchmont Manor.....	40-43
Village of Mt. Vernon.....	43-45
Village of North Tarrytown	45
Village of Oneida	46
Village of Plattsburgh.....	46
Village of Sing Sing.....	46
Village of Saranac Lake.....	47-70
City of Johnstown:	
Investigation and report upon sewer system.....	70-96
Investigations by order of the Governor:	
Barren Island	99-101
Catskill Shale Brick and Paving Co.....	101-107
Saratoga Lake	107-112
Special investigations:	
National Starch Manufacturing Co., Glen Cove.....	115-117
Corinth high school, heating and ventilating system	117-123
City of Niagara Falls (polluted well water).....	123-141
Village of Avoca (water supply)	141-153
Village of New Paltz	153-157
Complaint of G. W. Davison in matter of the pollution of oyster beds and fisheries in Jamaica bay	157-183
Village of Depew (drainage defects)	184-191
Village of Athens (drainage defects)	191-192
Village of Chittenango (drainage)	193-204
Town of Clay (garbage from city of Syracuse)	204-207
Town of Camillus (garbage from city of Syracuse).....	208-210
Village of Ilion (garbage dump)	211-226
City of Utica (garbage disposal)	226-228
Village of Oneida (canning factory).....	229-232
Village of Oakfield (plaster of paris) .	233-238

Special investigations (<i>Continued</i>)	PAGE
Village of Ticonderoga (water supply)	238-243
Village of Mount Morris (smallpox)	243-245
Village of Camden (typhoid fever).....	246-253
City of Lockport (water supply)	254-263
Village of Lansingburg (sewers).....	264-292
Camp Black (water supply).....	292-295
City of Middletown (public schools)	295-312
Violations of rules for the sanitary protection of public water supplies:	
Village of Port Jervis	315-320
City of Utica	320-334
Borough of Brooklyn.....	335-442
Village of Peekskill	443-452
City of Niagara Falls (water supply).....	452-463
Village of South Nyack (water supply).....	464-484
Brief prepared by Prof. Olin H. Landreth in support of the passage of a bill for the protection and improvement of the purity of the waters of the state.....	485-491
Food and drugs	495-518
Report of Daniel Lewis, M. D., as a delegate to Pure food congress.	519-546
Report of Dr. F. C. Curtis as a delegate to convention of American Public Health Association	546-548
Report upon examination of samples of cheese from Elmira, N. Y..	548-554
Suppression of tuberculosis	556-576
History of an outbreak of small pox in 1898.....	576-600
Sanitary condition of the state	601-771

REPORT

ALBANY, *February 6, 1899*

To his Excellency, THEODORE ROOSEVELT, Governor of the State of New York:

Sir—The State Board of Health presents its nineteenth annual report as required by law. The experience of another year warrants a reiteration of the statements made in previous reports, that increased interest is being taken by the people of the state on questions of sanitation, and through the local boards of health, in perfecting the registration of births, marriages and deaths, thereby aiding this department in securing complete vital statistical records.

Many demands have been made on the board during the past year for advice in the matter of sewerage, also on the question of securing and maintaining pure supplies of potable water. All possible aid has been given by letter in response to these requests, and when deemed to be necessary, sanitary experts have been sent to various municipalities in the state for the purpose of investigating and advising with the local authorities as to the best methods to pursue in order to secure for them satisfactory sanitary results.

With reference to the sewerage of villages, it has been the rule of the board to submit all plans received to the state engineer for examination and report, before approving of same. During

the past year plans for sewer systems or additions to existing systems of sewers were approved for the following municipalities:

Villages of Plattsburgh, New Rochelle, Depew, Dolgeville, Sing Sing, Sharon Springs, Larchmont, North Tarrytown, Albion, Oneida, Lansingburg and Saranac Lake.

WATER SUPPLIES

During the past year complaints have been investigated as to alleged violations of rules and regulations made by this Board for the sanitary protection of public supplies of potable waters, as follows:

VILLAGE OF PORT JERVIS

The Port Jervis Water Works Company having complained of the existence of certain nuisances on its watershed, one of the consulting engineers of this board made an investigation and finding the conditions as complained of, arrangements were made by him with the water works company and the owner of the premises whereby the cause of the pollution of the water was removed.

CITY OF UTICA

Upon an investigation made by a representative of this board, it was found that the public supply of potable water of the city of Utica was being polluted by reason of the owner of a farm in the town of Frankfort spreading manure on his farm, the drainage from which without proper purification, passes into a stream which empties directly into one of the public reservoirs.

The above condition being in direct violation of the rules adopted by this Board, the local board of health was directed, as provided by law, to require the owner of the farm in question to conform to the rules.

CITY OF BROOKLYN

Some 70 violations of rules made for the protection of the water supply of Brooklyn being found, the attention of the department of health of New York was called to 47 of the cases which come under their jurisdiction, and that the board of health of the town of Hempstead in the borough of Queens, to 23 violations, with the result that the proper measures were taken by the health authorities of both municipalities to require the offending parties to comply with the rules.

VILLAGE OF PEEKSKILL

It being found that certain rules adopted for the protection of the Peekskill public water supply were being violated, instructions were given to the board of health of the town of Cortlandt in which the violations occurred, to compel compliance with the rules as provided by law.

During the year expert service was furnished in the following cases:

Village of Avoca in matter of procuring a pure water supply.

Village of Athens, inadequate sewerage facilities.

Village of Depew, defective drainage.

Village of Arverne, pollution of oyster beds and fisheries in Jamaica bay, by reason of sewage from the village, also from Edgemere hotel.

City of Utica, question of garbage disposal.

Village of Ilion, question of garbage disposal.

Complaints from town of Clay and village of Camillus, concerning disposal of garbage from city of Syracuse.

Investigation as to cause of typhoid fever in the city of Lockport.

Typhoid fever in village of Camden.

Investigation as to use of polluted wells in the city of Niagara Falls, in connection with epidemic of typhoid fever.

Inspection of plants located on Barren Island.

Investigation of a nuisance at Oakfield, caused by manufacture of plaster of paris.

Investigation of a nuisance caused by pea vines from a canning factory in village of Oneida.

Investigation as to alleged nuisance caused by the storing of fertilizers in village of Brighton.

Investigation as to condition of works of the National Starch Manufacturing Company at Glen Cove.

Report upon investigation of the system of heating and ventilating of the Corinth union school.

Report upon bacteriological examination of sputum from a patient suspected as having tuberculosis.

Report upon investigation as to the condition of certain sewers in the village of Lansingburgh.

Investigation of a nuisance in the village of Chittenango, caused by a stream running through the village.

CHEEKTOWAGA

Agreeable to arrangements made with the proprietors of the garbage reduction plant and several establishments for the manufacture of fertilizers, all of which are located at Cheektowaga, this Board is represented by an inspector who makes daily visits to the different establishments located there for the purpose of seeing that the rules made for the sanitary conduct of the business of the different establishments are complied with.

The monthly reports submitted by our inspector show that the work is being carried on in a sanitary manner, the different com-

panies availing themselves of any new appliances which would tend to make their establishments more sanitary.

INVESTIGATIONS ORDERED BY THE GOVERNOR

First. A complaint made by citizens of the village of Catskill, concerning an alleged nuisance caused by the Catskill Shale Brick Paving Company now known as the Eastern Paving Brick Company of Catskill.

Second. Complaint of citizens of Saratoga Springs concerning the alleged pollution of the waters of Saratoga lake.

Reports covering investigations of both of the above complaints will be found in the appendix.

RECORDS OF BIRTHS, MARRIAGES AND DEATHS

The card system of indexing records of births, marriages and deaths, which has been in vogue in the registration department of this Board for the past three years continues to furnish satisfactory results, besides being a more economical system than that formerly in use in the department.

During the past year some 140,000 certificates of births, marriages and deaths were received from the 1400 local boards of health of the state. As the local registrars in most cases hold their offices for but a year, it necessitates a constant correspondence with the new men, in the matter of giving them instructions as to their duties in connection with the local registration and the forwarding to this Board of all certificates of births, marriages and deaths occurring within their respective municipalities.

SANITARY CONDITION OF THE STATE

There were 121,000 deaths reported during the year, making a death-rate of 18.0 per 1000 of the reporting population. In 1897 the death-rate was 18.00; in 1896, 18.50.

The average longevity for the year indicated by the mortality was 55.3 years, against an average for 10 years past of 54.3.

There was an average during the year of 331 deaths daily; the average of a period of 10 years preceding was 325.

In the eight sanitary districts into which the State is divided the death-rates per 1000 population were:

Maritime district	20.00
Hudson valley district.....	17.65
Adirondack and Northern district.....	14.75
Mohawk valley district.....	16.50
Southern tier district.....	14.00
East central district.....	16.00
West central district.....	14.25
Lake Ontario and Western district.....	15.35

In the winter months the average daily mortality was 311; in the spring months, 326; in the summer months, 341, and in the autumn months, 328.

Of the deaths occurring in the four seasons, 25.0 per cent in the winter months were of subjects under five years of age; in the spring months, 27.7 per cent; in the summer months, 39.0 per cent, and in the autumn months, 30.7 per cent.

Zymotic diseases caused 9.5 per cent of the deaths occurring in the winter months; 9.4 per cent in the spring months; 22.2 per cent in the summer months, and 16.6 per cent in the autumn months; in the whole year 30.2 per cent.

Infectious diseases—The so-called zymotic diseases, which consist as classified of cerebro-spinal meningitis, typhoid fever, malarial diseases, smallpox, scarlet fever, measles, erysipelas, whooping-cough, diphtheria and diarrheal diseases, caused 17,088 deaths during the year, or 14 per cent of the total deaths, a proportion the same as last year and smaller than in previous years.

Smallpox, which the state at large has been free from for three years, developed this year an epidemic in the western part of the state remarkable for its wide-spread prevalence and for its extraordinary mildness, not a single death having occurred, although more than 200 persons were taken with it. It was introduced into the state in May by one individual, who himself had the disease so mildly that it escaped recognition, and being not long incapacitated from work, he continued his part as member of a traveling theatrical troupe which visited 22 localities before a second case developing among his associates, the nature of the disease was discovered. Prompt measures were taken to watch for and control it wherever there had been exposure, but in not a few places, nevertheless, it secured a foothold sometimes of weeks' duration before recognition, and reaching surrounding towns, has continued to exist through the year in various localities, 40 towns in all having had from one to 20 cases. Some of these still have it at the close of the year. Its mildness has caused a doubt as to its nature among many physicians in the rural parts of the state whither, by the nature of its introduction it for the most part appeared, who, by the protection which vaccination has afforded now seldom see this disease, but it has not eluded the diagnosis of well-informed observers, and there is no question of its being smallpox. We

have pursued some studies of it, by inoculation of calves with its virus and otherwise, which have as yet been attended with negative results. A full report upon this outbreak will appear in the appendix to this report.

Grippe recurred in milder form than in any of its annual reappearances which have followed the general outbreak in December, 1889. The number of deaths attributed to it, occurring in the early part of the year, is 2500, heretofore it having been estimated to have caused from 3000 to 8000 deaths each epidemic. It reappeared in December, however, with severity, the winter epidemic of 1898-9 having commenced earlier, with which may be noted the fact that severe winter weather set in unusually early in this state, having begun the last week in November, and 1800 deaths have been attributed to it in this last month of the year.

Typhoid fever caused 1810 deaths which is an unusually large number. It was severer than is customary in the early autumn. It was not limited to one locality but was generally more prevalent. This report does not include deaths from this or other diseases occurring at Camp Wyckoff in the town of East Hampton on Long Island, during August, September and October. Returns of about 80 deaths from typhoid fever have been sent from there to this office.

Diphtheria is presenting a course of decreasing mortality now for three years. Thus our records are of 6616 deaths from this cause in 1894; 5696 in 1895; 4640 in 1896; 4117 in 1897; and 2612 in 1898. For 10 years prior to 1898 the average year's mortality from diphtheria was 5544. There has been an extraordinary decrease in the present year to less than half the customary mortality.

Scarlet fever for the past four years has had a low mortality amounting to 825 deaths a year, which is that of this year; while for the four years before there were each year more than 1800 deaths. During recent time the disease has been prevalent, often very extensively, but of very mild type and attended with few fatalities.

Measles caused fewer deaths than usual. It is a disease of variable prevalence, two to four years of low mortality being followed by a similar period of high, ranging from 800 deaths to more than 2000 in the year. This year there were 837 deaths from it.

Whooping-cough is fourth of the zymotic diseases in the number of deaths, being exceeded by diarrheal diseases, diphtheria and typhoid fever. It seldom causes less than 1000 deaths a year, and during this year has caused 1155 deaths. It prevails and causes fatality in the more populous regions; in rural parts of the state it caused eight deaths to 100,000 population and in the rest of the state 20. Its fatality increases as the warmer weather of summer approaches. These facts as to its distribution and time of prevalence have been heretofore noted every year.

Diarrheal diseases caused 8500 deaths, 8700 being the average of the past 10 years. This is 7.0 per cent of the total, and there is not much variation from this proportion year after year. In the rural parts of the state this cause of death operates later and increases the number of deaths in September, whilst the June increase is almost all from the large cities. This year the usual June increase was small, but the October mortality was excessive, and it came largely from rural parts of the state; the sanitary districts having small city population had unusually high diarrheal mortalities. For seven months in the year diarrhea is a

very small contributor to the death-rates, for it comes chiefly from June to October.

Malarial diseases constitute an inconspicuous cause of our reported mortality, causing about 400 deaths a year. Three-fourths of these come this year from the Maritime district. Its reported mortality appears to be decreasing.

Cerebro-spinal meningitis has been more than usually prevalent this year and caused more deaths than any on our records, though without any reported epidemic occurrence. Of the 700 deaths, 400 came from the Maritime district and 92 each from the Hudson valley and Lake Ontario and Western districts.

Consumption is the largest single cause of death, and the one which is attended with the least variation, generally causing, as this year, about 13,000 deaths. Year after year it constitutes with uniformity from 10.5 to 11.0 per cent of the total mortality, and nearly two deaths per 1000 population. The number of deaths in the state would be less by one-tenth without it and the death-rate would be reduced to 16.00. The sanitary district which always has the lowest mortality from consumption is the southern tier, where 7.5 per cent of the deaths were from it; in the Maritime district it is highest, 11.5 per cent. The larger the urban population the greater the relative number of deaths from consumption. This disease is accepted as one of the infectious and preventable class and ultimately this will operate to control its spread and lessen its large ratio of mortality.

Acute respiratory diseases caused 16,350 deaths, the largest of any group in our series. From June to September the deaths each month were less than 1000, in all the other months more than 1000, and in December there were 2250, many of them being due to grippe. About 12.0 per cent of the deaths in the year were

from this cause. The largest relative fatality from it is generally in the Maritime district.

Of other local diseases, the prevalence and fatality were not different from the normal of past years.

Cancer caused 4385 deaths, which is large compared with preceding years, and it is worthy of note that the number of deaths has been greater each year than the year preceding during the past 10 years.

It is also true that the fatalities due to accidents and violence are increasing.

The number of deaths attributed to old age as a cause continues without material change about 5500 a year.

CHEMICAL WORK OF THE BOARD

During the year ending December 31, 1898 all work referred to the laboratory has received prompt attention. Fifty-eight samples of water received from time to time have been analyzed and reported upon. Seventy samples in all were received, but of these 12 were either insufficient in quantity, or otherwise unsatisfactory for purposes of analysis, and as no second samples were received in these cases, no examinations were made. Most of the samples were submitted by local boards of health and they came from the following localities: Albany, Allegany, Bloomingburgh (two samples), Caledonia, Castleton, Cattaraugus (six samples), Corning (four samples), Dansville, Elmira (eleven samples), Esperance, Green Island, Hoffman Island (Quarantine), Ilion (three samples), Iroquois, Middleport (two samples), Mount Vernon, Newark Valley (four samples), New Scotland, Niagara Falls (five samples), Norwood, Otisco, Potsdam (two samples), Rome, Sandy Hill, Ticonderoga (two samples), Weedsport (two samples). The analyses included the usual sanitary determinations and in a

few instances qualitative analyses of mineral constituents and determinations of hardness, etc., were made.

Fifty-nine samples of drugs collected in New York city, Yonkers, White Plains, Mount Vernon, Peekskill, and Sing Sing have been examined, and these included samples of tincture of iodine, ammonia water, diluted acetic acid, diluted hydrochloric acid, diluted phosphoric acid, potassium bi-tartrate, ether, compound spirit of ether, chloroform, creosote, seidlitz powders and precipitated sulphur. One sample of kerosene oil was examined, and three samples of water from the Cayadutta creek at Johnstown were analyzed and a personal inspection of the locality made with full report thereon. Advice has been given, and examinations made, in various cases in which complaints had been made to the Board of alleged nuisances, and all other matters referred to the laboratory have received prompt attention and been reported upon from time to time.

ADULTERATION OF FOOD AND DRUGS

During the past few years on account of the small appropriations made for the use of this Board, and the increasing demands made upon it by different municipalities of the state in connection with investigations as to unsanitary conditions, the work of examining samples of food and drugs has not received the attention its importance demands, and it is hoped that provision will be made by the present Legislature for a sufficient appropriation to carry out this important work.

DIPHTHERIA ANTITOXIN

In view of the extended use of preparations of diphtheria antitoxin, this department has under consideration, the question of providing a uniform test of samples of the various serums placed

for sale in this state by the different manufacturers, in order to overcome the placing on the market such preparations of the serum as may be of an inferior quality.

In connection with the subject of diphtheria it is gratifying to note as shown under the head of "Sanitary Condition of the State," the great decrease in mortality from this disease during the past three years from 6616 deaths in 1894 to 2612 deaths in 1898.

TUBERCULOSIS COMMITTEE

The tuberculosis committee of the Board summarize their work for the year as follows:

In reviewing the work of the tuberculosis committee for the past year, it is not possible to convey a correct estimate of the advance of our work by a mere statement in figures, of the number of cattle examined, tuberculin tested, condemned and killed, or placed in quarantine under the supervision of local boards of health, for the reason that our work has been largely educational, by the distribution of a large amount of circular literature of information and instruction, regarding tuberculosis, the characteristics of the disease, its proper management, the disinfection of stables, etc.

Besides this we have carried on a very large correspondence, also educational in its character, with cattle owners, veterinarians, dairymen and health officials, and employed a number of expert veterinarians and borne their traveling and other expenses, to go into many parts of the state, for the purpose of diagnosing tuberculosis in cattle, by the tuberculin test, and further demonstrate the disease by careful autopsies, as required by law.

Other expenses have been entailed in the disinfection of cars, stables, etc., and in the payment of fees and traveling expenses of appraisers appointed by the Comptroller, to appraise a few badly infected herds.

The committee were without funds for the prosecution of their work, until the Legislature granted the small appropriation of ten thousand dollars (\$10,000), which became available about May 1st.

During this time many herds had been reported to the committee, by owners, veterinarians and health officials, and in many instances after having received advice and instruction from the committee, owners were lead to purify their own herds, without asking aid or remuneration from the state.

Where it was impossible to bring this about, diseased cattle coming to our attention, were reported to local health departments, with instructions to maintain such cattle in quarantine, and prevent the sale or use for food of their products.

In January, 1898, the committee having no funds on hand, were obliged to slaughter a large herd of 72 registered Jerseys, belonging to the estate of the late Judge S. C. Gray near Elmira. This herd had been advertised to be sold at auction to settle the estate.

A large number of this herd showed by physical inspection, that they were in advanced stages of tuberculous disease. They were tuberculin tested, appraised and slaughtered. The autopsies verified the diagnosis of the disease, as shown by the tuberculin test. The award in this case amounted to two thousand four hundred and fifteen dollars (\$2415).

We have a written agreement with the administrator of the

estate, that this award shall not be paid unless a sufficient appropriation is granted by the present Legislature.

It would have been a dangerous menace to the public to have allowed this number of badly diseased cattle to be distributed about the state.

In June, 1898, a herd of 26 swine were found tuberculous and slaughtered. The swine had all contracted the disease by eating the offal at a slaughter house, where band-box or bologna-sausage cattle had been slaughtered.

Microscopical examinations, and inoculations have been made, and the tubercle bacilli shown to exist in sections of diseased tissues, or the milk of diseased cows.

We have reported several well-authenticated cases where human tuberculosis is believed to have been contracted by the use of the milk of tuberculous cattle. The slaughter and autopsies of diseased cattle have always demonstrated the great value and accuracy of the tuberculin test as a diagnostic agent, and have never failed to convince the most skeptical, that tuberculosis existed and has been conveyed to healthy cattle, by direct infection.

The committee have made written reports each month to the State Board of Health, which show many interesting features of our work, and which we believe clearly demonstrate the urgent need of a more liberal appropriation.

Since January, 1898, the committee have reported the examination and tuberculin test of 1874 cattle of which 192 have been condemned, and 64 of that number have already been destroyed. The remaining number of those condemned, were ordered quarantined, and the local health officers charged with the duty of maintaining the quarantine.

During the past month, several badly infected herds have been detected. In one herd of 42, 39 were found diseased; in another of 20, 13 were found diseased; in another of 26, nine were found diseased, and in another of 12, five were found diseased.

In 16 herds examined by our committee, in which one or more animals were known to be badly diseased, over 40 per cent were found affected. We find where a badly diseased cow has been known to exist in a herd for a period of a year or more, a considerable number of apparently healthy cattle in such herd, are sure to be affected, showing as plainly as it is possible to show, the virulence of the infectiousness of this disease.

In 17 herds examined for the Syracuse milk supply, and where no disease was apparent by physical inspection, 4 per cent were found diseased.

Letters of inquiry and the correspondence of the committee, have increased constantly each month, and reports of diseased cattle are coming more frequently, and with increased numbers.

It frequently happens that a farmer's dairy is his only means of support, and unless conditions are such that he can receive at least a partial remuneration for the loss of his tuberculous cattle, he is not likely to make public the fact that he has such diseased cattle in his possession.

The committee urgently feel the need of a larger appropriation for carrying on their work, which means a great and material benefit to cattle owners and citizens alike of the entire state.

It means to all consumers of milk, the removal of a serious menace to health and life. We believe also that the cost to the state will be more than repaid by the increased demand for cattle, and the value of their products.

In the appendix will be found the reports of the sanitary and engineering experts of this Board upon the different investigations made by them during the year.

Respectfully submitted,

DANIEL LEWIS, M. D.,

President

BAXTER T. SMELZER, M. D.,

Secretary and Executive officer

FRED'K W. SMITH, M. D.,

S. CASE JONES, M. D.,

GEO. B. FOWLER, M. D.,

FRANK E. SHAW,

OWEN CASSIDY,

Commissioners

A. H. DOTY, M. D.,

Health officer Port of New York

C. W. ADAMS,

State engineer and surveyor

T. E. HANCOCK,

Attorney-general

APPENDIX

NINETEENTH ANNUAL REPORT

OF THE

STATE BOARD OF HEALTH

Financial Report from 1 October 1897 to 1 October 1898

SALARIES

1897.		
Nov.	1. Salaries for October	\$1,491 66
Dec.	1. Salaries for November	1,466 66
1898.		
Jan.	1. Salaries for December	1,466 68
Feb.	1. Salaries for January	1,466 66
March	1. Salaries for February	1,466 66
April	1. Salaries for March	1,466 68
May	1. Salaries for April	1,466 66
June	1. Salaries for May	1,466 66
July	1. Salaries for June	1,466 68
Aug.	1. Salaries for July	1,416 66
Sept.	1. Salaries for August	1,341 66
	26. Salaries for September	1,516 68
		<hr/>
		\$17,500 00
		<hr/>

TRAVELING AND NECESSARY EXPENSES

1897.		
Oct.	12. F. E. Shaw	\$42 38
	14. G. B. Fowler.....	29 75
	16. G. B. Fowler.....	15 00
	4. G. B. Fowler.....	10 00
Nov.	1. S. Case Jones.....	73 54
	9. F. E. Shaw.....	40 08
	F. W. Smith.....	77 41
	12. John P. Martin.....	54 25
	27. Owen Cassidy	100 60

1897.

Dec.	1.	F. E. Shaw.....	\$41 58
	15.	Baxter T. Smelzer.....	158 40
	21.	C. W. Adams.....	39 48
		T. A. Stuart.....	13 65

1898.

Jan.	5.	A. H. Doty.....	27 25
		S. Case Jones.....	64 22
	11.	F. E. Shaw.....	47 28
	12.	Owen Cassidy	31 78
Feb.	24.	Owen Cassidy	136 14
March	16.	F. E. Shaw.....	34 68
	19.	A. H. Doty.....	53 90
	26.	S. Case Jones.....	77 48
		Daniel Lewis	109 90
		C. W. Adams.....	27 55
April	13.	F. E. Shaw.....	41 83
		F. W. Smith.....	94 04
May	2.	C. W. Adams.....	11 70
	13.	Owen Cassidy	71 10
	18.	Baxter T. Smelzer.....	160 87
June	7.	F. E. Shaw.....	29 68
	24.	S. Case Jones.....	66 80
July	8.	F. E. Shaw.....	46 38
	28.	T. A. Stuart.....	46 58
Aug.	1.	Daniel Lewis	39 62
Sept.	2.	C. W. Adams.....	42 91
	21.	A. H. Doty.....	6 55
		Owen Cassidy	108 05

\$2,072 41

TEMPORARY AND EXPERT SERVICE

1897.

Oct.	12.	John P. Martin.....	\$143 52
	18.	Ida H. Lindsay.....	106 66
		Charles E. Thompson	53 33
		A. K. Cole.....	179 99
		George G. Champlin.....	53 33

1897.

Oct.	18.	L. F. Rolfe.....	\$159 99
		P. S. Hurd.....	106 66
		Bowen Staley	106 66
		Lewis H. Watkins.....	108 00
		Arthur West	108 00
		Arthur Riordan	108 00
		F. D. Beagle.....	112 00
Nov.	9.	A. K. Cole.....	104 00
		W. M. Thomas.....	17 50
	12.	John P. Martin.....	357 60
		John P. Martin.....	122 42
	19.	P. S. Hurd.....	33 33
	26.	Lewis H. Watkins.....	120 00
Dec.	1.	F. D. Beagle.....	152 00
		Arthur West	152 00
		Arthur Riordan	152 00
		Ernst J. Lederle.....	141 50
	9.	F. C. Curtis.....	67 94
		Lewis H. Watkins.....	32 00
		A. K. Cole.....	104 00
		John P. Martin.....	98 23
	11.	Lewis H. Watkins.....	106 66
	21.	Geo. G. Champlin.....	150 00
		Charles E. Thompson.....	75 00
		L. F. Rolfe.....	150 00
		F. D. Beagle.....	150 00
		A. C. West.....	150 00
	31.	A. K. Cole.....	108 00
		P. S. Hurd.....	75 00
		A. C. West.....	108 00
		A. Riordan	108 00
		A. Riordan	150 00
		F. D. Beagle.....	108 00

1898.

Jan.	3.	Bowen Staley	75 00
		A. K. Cole.....	150 00
	10.	John P. Martin.....	96 76
	11.	Olin H. Landreth.....	38 98
	21.	T. A. Stuart.....	150 00

1898.

Feb.	4.	Jerome Lartigau	\$50 00
	1.	A. K. Cole	104 00
	15.	F. C. Curtis	26 15
	28.	F. D. Beagle	124 00
		A. K. Cole	96 00
March	16.	I. H. Lindsay	150 00
		L. F. Rolfe	75 00
		John P. Martin	130 04
	29.	F. D. Beagle	108 00
		A. K. Cole	108 00
April	4.	Bender Hygienic Laboratory	65 00
May	2.	F. D. Beagle	104 00
		A. K. Cole	104 00
		Denis Leary	60 00
	13.	John P. Martin	277 69
	28.	F. D. Beagle	104 00
		A. K. Cole	104 00
June	24.	Olin Landreth	122 74
		John P. Martin	118 65
July	7.	University of the State of New York...	169 13
		F. D. Beagle	104 00
		A. K. Cole	104 00
	21.	John Bogart	596 43
	28.	George G. Champlin	45 00
		P. S. Hurd	45 00
		F. C. Curtis	101 98
Aug.	6.	A. K. Cole	104 00
		F. D. Beagle	104 00
Sept.	1.	University of the State of New York...	174 27
		A. K. Cole	108 00
		F. D. Beagle	108 00
	3.	Maude C. Hunter	126 00
		John P. Martin	91 20
	12.	University of the State of New York..	321 04
	30.	A. K. Cole	104 00
		F. D. Beagle	104 00

\$9,491 38

FOOD AND DRUGS

1897.

Oct.	10.	W. G. Tucker.....	\$136 85
Nov.	9.	W. G. Tucker.....	125 00
Dec.	6.	W. G. Tucker.....	125 00

1898.

Jan.	11.	W. G. Tucker.....	125 00
Feb.	4.	W. G. Tucker.....	125 00
March	2.	W. G. Tucker.....	125 00
April	4.	W. G. Tucker.....	125 00
May	2.	W. G. Tucker.....	125 00
June	7.	W. G. Tucker.....	125 00
July	7.	W. G. Tucker.....	125 00
Aug.	10.	W. G. Tucker.....	125 00
Sept.	2.	W. G. Tucker.....	125 00

\$1,511 85

PETTY CASH

1897.

Oct.	4.	Mozzeltie Manufacturing Co.....	\$48 00
	12.	G. A. Birch	2 60
	14.	Conference State and Provincial Boards of Health	5 00
Nov.	9.	Van Est, Graves & Co.....	5 00
		G. A. Birch.....	2 60
Dec.	1.	G. A. Birch.....	2 60
	9.	W. K. Sanders.....	3 00
		George T. Diamond.....	2 24
		Plaza Hotel	5 00
		Ballard & Kirschbaum.....	2 00
	31.	G. A. Birch.....	2 70
		G. T. Breakenridge.....	4 80

1898.

Jan.	6.	H. W. Alexander.....	4 00
Feb.	26.	Plaza Hotel	5 00
		Charles M. Stuart.....	6 50
March	2.	W. K. Saunders.....	3 00
		H. W. Riggs.....	7 00
		Imperial Hotel	15 00

1898.

April	4.	James M. Borthwick.....	\$5 00
May	13.	A. M. Michael	2 50
		Lang Stamp Works.....	19 05
	28.	State and Provincial Boards of Health of North America	20 00
June	24.	Western Union Telegraph Co.....	3 00
		W. K. Sanders.....	7 65
July	7.	Fraser & Kelly.....	2 40
		National Press Intelligence Bureau...	3 65
Aug.	1.	J. Chase	9 75
	10.	W. R. Childs.....	5 00
		Fraser & Kelly.....	4 48
		E. C. Tower.....	16 00
Sept.	12.	Great Bear Spring Co.....	7 50
			<hr/>
			\$232 02
			<hr/> <hr/>

PRINTING

1897.

Nov.	19.	Brandow Printing Co.....	\$210 32
Dec.	9.	Brandow Printing Co.....	346 50

1898.

Jan.	11.	Brandow Printing Co.....	312 50
March	16.	Brandow Printing Co.....	172 26
April	13.	Brandow Printing Co.....	193 12
July	7.	Brandow Printing Co.....	168 53
Aug.	6.	Brandow Printing Co.....	984 43
			<hr/>
			\$2,387 66
			<hr/> <hr/>

TELEGRAPH AND TELEPHONE

1897.

Oct.	12.	Hudson River Telephone Co.....	\$11 72
		Western Union Telegraph Co.....	12 67
Nov.	9.	Hudson River Telephone Co.....	12 57
		Western Union Telegraph Co.....	6 61
Dec.	9.	Hudson River Telephone Co.....	12 62
		Western Union Telegraph Co.....	2 50

1898.

Jan.	12.	Hudson River Telephone Co.....	\$12 62
		Western Union Telegraph Co.....	5 61
Feb.	4.	Hudson River Telephone Co.....	12 64
		Western Union Telegraph Co.....	8 61
March	2.	Hudson River Telephone Co.....	12 34
April	4.	Western Union Telegraph Co.....	5 63
	13.	Hudson River Telephone Co.....	14 79
May	13.	Western Union Telegraph Co.....	7 61
		Hudson River Telephone Co.....	13 84
		Western Union Telegraph Co.....	4 29
June	7.	Western Union Telegraph Co.....	8 06
	24.	Hudson River Telephone Co.....	12 14
July	7.	Hudson River Telephone Co.....	12 24
		Western Union Telegraph Co.....	7 62
Aug.	10.	Hudson River Telephone Co.....	12 59
		Western Union Telegraph Co.....	6 62
Sept.	12.	Hudson River Telephone Co.....	11 34
		Western Union Telegraph Co.....	7 86
			<hr/>
			\$235 14
			<hr/>

LIBRARY

1897.

Oct.	4.	Lea Brothers & Co.....	\$6 00
	12.	John Crayton	1 30
		William Wood & Co.....	5 00
Nov.	9.	John Crayton	1 30
		P. Blakiston, Son & Co.....	11 00
	19.	Journal of Comparative Medicine....	3 25
		P. Blakiston, Son & Co.....	4 50
Dec.	1.	John Crayton	1 43
	9.	Matthew Bender	3 50
	31.	Albany News Co.....	1 65

1898.

Jan.	6.	Albany News Co.....	1 15
	11.	The Argus Co.....	7 50

WESTERN HOUSE OF REFUGE FOR WOMEN, ALBION, N. Y.

Sewage disposal works

During the summer of 1898 the board of managers of the Western House of Refuge for Women, a state institution situated at Albion, N. Y., closed a contract for the construction of a sewage disposal plant on the forced-aeration filter system after plans prepared under the direction of Col. Geo. E. Waring, jr.

The contract provides for the removal, at all times, of 95 per cent of the organic material in the sewage and for the final inspection and approval of the State Board of Health.

The plans were approved by the State Board of Health at a meeting held September 26, 1898.

DOLGEVILLE, N. Y.

Separate sewer system

Plans for a separate sewer system and chemical precipitation works were submitted to the State Board of Health and approved by that Board on February 22, 1898.

The plans include a general sewer map forming plate "A," of this report, two sheets of sewer profiles, a sheet of street sewer details and a general plan of chemical precipitation tanks forming plate "B" of this report and the following documents by the designing engineers.

Descriptive statement hereto appended.

Estimate of cost hereto appended.

Notice to contractors.

Form for bid.

Contract and specifications.

Bond.

DOLGEVILLE, N. Y., *February 16, 1898*

To the Honorable the State Board of Health of the State of New York:

Gentlemen—We have the honor to herewith respectfully submit the “Plans and specifications” for our sewerage system, together with other data, which we hope will be sufficient to cover the requirements of your honorable Board.

In the consideration of the matter as to whether we will be permitted to discharge direct into the creek, or be compelled to build and operate “disposal works,” we pray your honorable body to consider: ,

First—That in our plans we have provided “disposal works,” which can be built when, in your wisdom, it may be deemed necessary for the public health so to do.

Second—The nature of the stream into which we propose to discharge, the normal flow of which is, during the drouth season, 5600 cubic feet per minute, which—immediately below where we propose to discharge—flows through a deep, narrow gorge for a distance of about two and three-quarter miles, before Inghams Mills, a small village, is reached. The creek, throughout its entire length, has no still or stagnant water worth mentioning, but is a system of unbroken rapids and fall.

Third—Our present population, according to the enumeration taken in January 1898, is 2218.

As no rain gauge has been kept in the immediate vicinity, we cannot accurately state the amount of rainfall, except to say that in our judgments, the minimum does not go below 23 inches and the maximum does not go above 42 inches per year.

Praying that the plans and specifications submitted herewith may meet with your favorable approval, we beg to subscribe ourselves, with very much respect, your most obedient servants.

THEO. H. ROTH,

President

L. E. LAMBERT,

FRANK J. LOUCKS,

EVERETT L. DUNCKEL,

JULIUS BUCKWOLTZ,

Board of Sewer commissioners

LEO H. WOLFRAM,

Clerk

WM. H. COLLINS,

Consulting engineer for Board Dolgeville, N. Y.

*To the Honorable the Board of Sewer Commissioners, Village of
Dolgeville, N. Y.:*

Gentlemen—In accordance with your instructions we have made a design for a permanent system of sewerage for your village, from surveys and data furnished by your village engineer, Mr. William H. Collins, C. E.

We present herewith a map of the village on a scale of 200 feet to the inch, with contour lines for every 10 feet in elevation. Upon this map the sewers are designated, as are also the sizes of the pipes, rate of grade, direction of flow, man-holes, flush-tanks, lamp-holes, etc. The elevation of the sewer grade is marked at intersections and important points. The sewers designated by full lines are the ones that are proposed to be built now, while those shown by broken lines are to be built in the future as needed. Profiles of each street and detail plans of man-holes, flush-tanks and lamp-holes are also furnished.

The village of Dolgeville is located on the East Canada creek, which has a minimum flow of about 5600 cubic feet per minute. About one-half mile below the village is located the High Falls dam, affording a magnificent water power. It is just below this dam that we have selected the place of discharge of the outlet sewer and also the site for the disposal works, when such may be required. The first mill down the stream is about two and three-quarter miles below the place for discharge.

The accompanying map shows streets laid out throughout the entire village, many of which are not graded or used as streets and will not be for considerable time to come. We have shown sewers in most of these streets, and the streets in which sewers are not shown are entirely outside of the territory likely to be occupied.

The natural water courses and conditions are such as to afford excellent opportunity for surface drainage and for the carrying off of the rain water which flows from the steep slopes of the streets, without expensive construction.

The system of sewerage as designed is what is known as the "Separate System," the reason for adopting it being its effectiveness and economy of construction.

The plan presented provides for a complete system of pipe

sewers of sufficient size to safely carry all house sewage to the place of discharge, when running half full.

The smallest sewers are six inches in diameter and the minimum grade, in a few instances, is .5 per 100 feet, but in most cases much steeper than that.

In making our calculations we have assumed that sewage would be discharged at the rate of 100 gallons per day per capita. Allowing five persons to each 50-foot lot, or 10 persons to each 50 feet of sewer, would result in 20 gallons per day to each lineal foot of sewer over the entire village.

The map shows about 105,500 lineal feet of sewers tributary to the main outlet, a territory that would accommodate on the assumption above, of one person to each five feet of sewer, 21,000 people. The main outlet sewer is designed to be 20 inches in diameter and laid in a minimum grade of .42 per 100 feet. The Dolge avenue outlet sewer is to take care of a territory calculated to accommodate 1500 people.

Flush-tanks to discharge 200 gallons of water are provided at all dead ends to insure proper and systematic cleansing.

Man-holes at all intersections and changes of line or grade, together with lamp-holes, as indicated, will afford ample opportunity for inspection and ventilation.

The existing sewers as shown on the profiles are so few that owing to the manner in which they were constructed and the variation from the size required, it has been deemed wise to leave their use out of consideration at the present time.

Plans for disposal works are also shown. The plans call for four precipitating tanks, 15 feet wide, 40 feet long and six feet deep. These tanks can be increased when necessary.

The plans contemplate the discharge of the mixed chemicals, lime and alumina, into the sewer before the sewage reaches the inlet channel. Upon entering the inlet, the sewage passes through a series of baffle plates and screens, thus thoroughly mixing the chemicals with the sewage. By means of stop planks the flow can be controlled and diverted to the different tanks, where after precipitation, the effluent is drawn off and discharged through the channel provided. The sludge to be conveyed through the sludge-channel to the sludge-well, from whence it can be pumped to the press. The disposal works are so located that

clarified effluent discharges about 10 feet below the inlet channel and this fall could be utilized to pump the sludge to the press, or power can be supplied from the power-house just above.

In view of the minimum flow in East Canada creek being 5600 feet per minute, and that no villagers are using this stream as a source of water supply, and that the first mill is two and three quarter miles below, it is believed that disposal works will not be required to be operated for some time to come.

Respectfully submitted,

ALLEN, FARRINGTON & CO.,

Designing engineer

APPROXIMATE ESTIMATE	Cost of Sewers proposed to be constructed at present
2,300 lineal feet, trenching under 6 feet at \$0 12	\$276 00
14,220 lineal feet, trenching under 8 feet at 25	3,555 00
13,700 lineal feet, trenching under 10 feet at 35	4,795 00
4,550 lineal feet, trenching under 12 feet at 55	2,502 50
3,870 lineal feet, trenching under 14 feet at 65	2,515 50
2,000 lineal feet, trenching under 16 feet at 80	1,600 00
300 lineal feet, trenching under 18 feet at 1 10	336 00
670 lineal feet, trenching under 20 feet at 1 40	938 00
370 lineal feet, trenching under 24 feet at 1 70	620 00
43,310 lineal feet, furnishing and laying 6 feet pipe at .10	2,331 00
9,000 lineal feet, furnishing and laying 8 feet pipe at .15	1,350 00
1,760 lineal feet, furnishing and laying 10 feet pipe at .20	352 00
1,360 lineal feet, furnishing and laying 12 feet pipe at .25	340 00
1,650 lineal feet, furnishing and laying 15 feet pipe at .35	577 50
1,540 lineal feet, furnishing and laying 18 feet pipe at .45	693 00
3,380 lineal feet, furnishing and laying 20 feet pipe at .60	2,028 00
5 tons cast iron pipe at \$30 00	150 00
700,000 feet B. M. spruce timber in place	200 00
2,000 cubic yards rock excavation at \$2 50	5,000 00
80 cubic yards rubble masonry in cement at \$3 00	240 00
60 cubic yards concrete (Portland) at \$6 00	360 00
30 Flush tanks at \$45 00	1,350 00
5 Manholes No. 1, under 10 feet at \$30 00	150 00
14 Manholes No. 1, over 10 feet at \$55 00	770 00
30 Manholes No. 2, under 10 feet at \$45 00	1,350 00
15 Manholes No. 2, over 10 feet at \$50 00	750 00
31 Manholes No. 3, under 10 feet at \$45 00	1,395 00
14 Manholes No. 3, over 10 feet at \$50 00	700 00
45 Lamp Holes at \$8 00	360 00
1 8-inch iron pipe crossing 250 feet	800 00
Engineering and contingencies	\$37,058 50
Estimated total cost	\$40,764 00

The plans submitted received the approval of the State Board of Health on February 22, 1898.

DEPEW, N. Y.

Changes in sewer location

Original plans for the sewer system of the village of Depew were approved by the State Board of Health on June 30, 1896, and appear in the 17th annual report. Certain changes in the same were approved on December 31, 1896, and on April 28, 1897, and appear in the 18th annual report.

Further changes were submitted to the State Board of Health and received its approval on January 28, 1898. These latter changes are described in the following letter from the designing engineers hereto appended and the map and profiles of the sewers as changed forming Plate "C" of this report.

BUFFALO, N. Y., *October 20, 1897.*

Depew Sewer Commissioners, Depew, N. Y.:

Gentlemen—We hand you herewith plans and append a comparative estimate of cost of changing the trunk sewer between Broadway and Ellicott road from Falcon street to a line 155 feet easterly of and parallel with the westerly boundary of Alois Adolf's property, or about 310 feet easterly of the center of Falcon street. This change will shorten the trunk sewer in both Broadway and Ellicott road and will lengthen the sewers in each of these streets coming from the west, as well as necessitate a local sewer for Falcon street from Broadway to Gould avenue.

We know of no physical reason why the trunk sewer may not be built equally well in the proposed location as in Falcon street.

Yours very truly,

GUTHRIE & LOCKWOOD

Proposed trunk sewer changes

STREET	From	To	Size.	Length.	Average cut.	Number of man-holes	Number of 6-inch Ys	Maximum cost	Minimum cost
Broadway	Borden ...	Trunk sewer	36"	1,644	11.9	7	35	\$4,641 56	\$3,945 34
Trunk sewer .	Broadway	Ellicott road	24"	2,107	25.7	3		13,441 87	8,876 20
								\$15,083 43	\$12,820 94

Trunk sewer replaced by proposed plan

STREET	From	To	Size.	Length.	Average cut.	Number of man-holes	Number of 6-inch Ys	Maximum cost	Minimum cost
Broadway	Borden	Falcon	30"	2,014	12.0	7	100	\$5,437 67	\$4,613 52
Falcon	Broadway .	Ellicott	24"	1,808	25.7	3	30	9,007 27	7,356 18
Ellicott	Falcon ..	Trunk sewer	24"	315	21.8	2	15	1,024 63	870 94
								\$15,450 57	\$13,140 64

New lateral sewers required by change

STREET	From	To	Size.	Length.	Average cut	Number of man-holes.	Number of 6-inch Ys	Maximum cost.	Minimum cost.
Broadway. .	Falcon	Franklin . .	30"	370	18.1	1	15	\$763 39	\$640 89
Falcon	Broadway .	Gould	8"	677	11.0	3	57	417 56	354 03
Ellicott road	Trunk sewer	Burk'dt . . .	15"	490	22.6	3	30	1,449 58	1,327 00
								\$2,014 48	\$2,292 81

Old lateral sewers replaced by changes

STREET	From	To	Size	Length	Average cut	Number of man-holes	Number of 6-inch Ys	Maximum cost.	Minimum cost.
Ellicott road .	Falcon .	Burk'dt	15	240	22.1	2	..	\$412 50	\$350 53

	Maximum	Minimum.
Decreased cost by proposed trunk sewer.....	\$376 14	\$319 70
Decreased cost by proposed lateral sewer	2,201 98	1,871 92
Increased cost of proposed trunk and lateral sewers over former plan	\$1,825 84	\$1,552 20

NEW ROCHELLE, N. Y.

Changes in outlet sewer

Original plans for the sewer system of New Rochelle were approved by the State Board of Health on December 19, 1888, and appear in the 9th annual report of the Board.

Complaints having been made concerning the pollution of the waters of Echo bay by sewage, plans for a change of location of the outlet sewer at Echo bay were submitted to the State Board of Health and approved by that Board on January 29, 1898. This change of location is described by the following communications and by the map and profile forming plates "D" and "E" of this report:

NEW ROCHELLE, N. Y., *January 22, 1898*

To the Honorable State Board of Health:

Gentlemen—We beg to request your approval of the modification of a portion of the sewerage system of the village of New Rochelle, this modification providing for the interception of the sewage at Hudson park, and the construction and extension of an outlet so that the delivery of the effluent will be in the waters of the sound beyond Bailey's rock.

There is sent herewith a map showing this locality and a profile showing the gradient of the proposed outlet.

Very respectfully,

**THE COMMISSIONERS OF SEWERS AND DRAINAGE,
of the Village of New Rochelle,**

By JOHN Q. UNDERHILL,

President

To the Honorable State Board of Health of the State of New York:

Gentlemen—In compliance with the request of your secretary, I herewith submit the following report on the proposed submerged sewer outlet at Hudson park in this village.

The sewage from this drainage district now discharges close

in shore at the town dock. This point is shown on the drawing and is marked "present outlet."

It is proposed to intercept the sewage at a point in the present 24 inch outlet on the northerly side of Hudson park, between manholes "C" and "D," continuing a new outlet sewer in a southerly direction through Hudson park, thence submerged across and along the westerly shore of Echo bay out into Long Island sound to a point about 3000 feet from Hudson park and 800 to 1000 feet beyond Bailey's rock.

All of the float observations made near the proposed point of discharge indicate that there will be no tendency of the sewage to enter Echo bay and but very little or no chance of any appreciable amount being deposited on the shores of Davenport's neck.

At this place (New Rochelle) during flood tides the currents in general are toward the west, Echo bay filling by a strong current which flows in a westerly and thence in a northwesterly direction close in shore around the southern and western shores of Premium point and Echo island. At the proposed point of discharge the currents flow westerly.

At ebb tides the currents of the sound flow easterly, which, together with the outward movement of the water in the harbor, caused the floats to move in a southeasterly direction and farther out into the sound.

All float observations were made either in calm weather or during the prevalence of southerly or southwesterly winds. None were made during north or northwesterly winds, as the tendency of these winds would be to carry the floats still farther off the shores.

From the point of interception on the present 24-inch outlet to the northerly end of the tunnel, the pipes will be first quality vitrified, salt glazed sewer pipes, double thickness, hubs three inches in depth, cemented joints and laid in the usual manner in an earth trench.

Examination made along the line through the park indicate that the rock will be found in the trench at a point about 175 feet from the point of interception. From this point to the southerly shore of Hudson park a tunnel six feet by eight feet will be driven.

That portion of the outlet pipe through the tunnel will be first quality 24-inch cast-iron water pipe, metal 15-16 of an inch in thickness, with joints securely caulked with lead in the usual manner.

Should any portion of the tunnel be through earth or should the rock sides and roof of the same prove insecure, the tunnel will be lined with brick masonry. The remainder of the pipes from the end of the tunnel to the point of discharge will be submerged, 24-inch cast-iron, metal $1\frac{1}{2}$ inches in thickness, with the Ward flexible joint, securely caulked with lead in the usual manner. The portion of the submerged pipe out so far as Bailey's rock will be laid in a trench dredged to a depth of at least three feet below the bottom of the harbor. Beyond Bailey's rock the pipe will be supported by creosoted pine piles six feet apart and six feet between the bents, capped with eight-inch by eight-inch creosoted pine timber cross pieces eight feet long secured to the tops of the piles. The pipes will be fastened to these cross pieces by wrought iron straps.

All pipes will be laid on a good foundation accurately to grade and line, and after the completion of the work will be tested to make sure that there is no appreciable leakage at the joints.

Respectfully submitted,

JAMES KNAPP WILKES,

Engineer

LARCHMONT MANOR

Original sewer plans

Original plans for a system of sewers and storm-water drains were submitted to the State Board of Health in April, 1898. The plans comprised:

A lithographed copy of a map of the village of Larchmont, forming plate "F" of this report.

A map of section No. 1 now proposed to be sewerred, forming plate "G" of this report.

A map of the portion of the village ultimately to be sewered, forming plate "H" of this report.

A map showing location of sewer outlet and a copy of U. S. Govt. Chart No. 271, showing shore surroundings near sewer outlet, the two forming plate "I" of this report.

Two sheets of sewer profiles.

Two sheets of street sewer details.

Forms for proposal, sureties, specifications, contract and bond.

Descriptive statement by the designing engineer hereto appended.

To the Honorable State Board of Health of the State of New York:

Report of L. E. Van Etten, C. E., in regard to sewer system at Larchmont Manor, Westchester county, N. Y.

The area embraced by the proposed system, as shown upon maps and profiles, is but sparsely built upon, with the exception of one block on Collins avenue, next the Boston post road. This portion has recently been built upon, for business purposes, from the Boston road to Addison street, on the northerly side only. Outside of this there are but six or eight scattered buildings in the entire area shown.

The section proposed to be sewered is to relieve this block principally. The engineer has advocated the best construction of the separate system, with broken stone foundation, for ground water drainage, with flush tanks at ends of laterals, and the plans as shown were accepted by the board of trustees, subject to approval by your honorable Board.

Six-inch pipe was recommended at the extreme ends of laterals, but were disapproved by the Board, and eight-inch substituted. Y-branches are to be five-inch.

An important and unfortunate fact showed itself during the progress of the work, and after plans were nearly completed, which was the elevations, as given, are not the true heights above mean high tide. It seems that the elevations in use at Larchmont are all established from what was supposed to be an old Government B. M., on a dock marked H. T. 9 ft. 2 inches. Grades for all existing sewers in the old part of village, road grades and all public work, both for old and new portions, are all in these terms. An established B. M. on stone monument

at Boston road and Collins avenue was shown me, and levels were begun at that point. Upon entering the salt meadows it soon became apparent that something was wrong with the mean high tide. I investigated the subject, made measurements from the supposed Government B. M., did not agree within 3.3 feet, wrote to the United States Government for information, received from them their B. M., which was not the one in question, and found 3.43 feet should be subtracted from all elevations of former levels. I would even then have changed levels to true ones, although plans were about completed for section 1, but I at once ran into the confusion of the established grades in Chatsworth avenue, Addison and Sheldon avenues and concluded it best to use those in use, making a note on all plans to subtract 3.43 feet for true heights.

For the same reason I have not attempted to show contour lines on plan of system other than the contours on the village map presented. I have established sewer grades on all streets possible. Roosevelt, Summit, Concord, Vanderburgh and Franklin are projected, but not opened or graded, and no houses. Chatsworth avenue has only two or three houses, but established grades, although not as yet graded to same. The plans of sewers for this street are made upon the established grades and not on the present ground levels. It is impossible to fix sewer grades upon these ungraded streets, as will be seen by the elevations, other than to show direction of fall, and that there will be ample fall to reach entire area. At Palmer avenue there is a 15-inch main shown, simply a possible future extension for property beyond N. Y., N. H. & H. R. R., which, however, will not be required for years.

It may be well to state the building upon each street at present:

From outlet on Boston road to Chatsworth avenue, only one building; restricted to residence use; sewers about seven feet deep.

Boston road from Chatsworth to flush tank; for business purposes; sewers about 9.5 deep; five or six buildings.

Collins avenue, Boston road to Addison; business purposes; northerly side nearly built up; sewer about 10.5 feet.

Addison street, three houses; residence property.

Chatsworth avenue, Addison to Boston road; residence property; no houses.

OUTLET

The outlet as proposed is placed under section 2. All the rest enumerated above is section 1, complete, with specifications. The outlet, or section 2, is not fully worked out as to specifications and estimates, the board of trustees considering it unnecessary until the lines, grades and disposal were passed upon by your Honorable Board.

The conditions of this outlet are as follows: A long length of 18-inch pipe, over marshes and salt meadow, three-fourths iron pipe supported on piles, emptying into the "gut" at the head of Larchmont harbor, at about half tide elevation. While it is recognized that this pipe might be extended to advantage in the future, still the large cost of this outlet, with the few inhabitants benefited, would at present be fatal to the contemplated improvement. This outlet is in a small bay on the salt meadows, away from all houses, and for the present would seem to be adapted for the purpose, at least until there was a large increase in the population of this area. I present a copy of the surroundings, as taken from the United States Government chart, which shows clearly the neighboring shores, although on a small scale, but the information is so clear and comprehensive, I trust your honorable Board may excuse the small scale upon which same is shown.

Dated April 1, 1898.

L. E. VAN ETTEN, C. E.

NEW ROCHELLE, N. Y.

MT. VERNON, N. Y.

Changes in sewer plans

Original plans for the sewer system of the city of Mt. Vernon were approved by the State Board of Health on December 16, 1887, and appear in the 9th annual report of the Board. Subsequent additions and changes in the plans have from time to

time been approved by the State Board of Health and appear in the 14th, 15th, 16th and 17th annual reports respectively. On September 26, 1898, the State Board of Health approved plans for the proposed new outlet sewer described in the following report of the designing engineer, and shown on plates "J," "K," "L" and "M" of this report.

**Description of the proposed outfall sewer for the city of
Mt. Vernon, N. Y.**

It is proposed to intercept all the sewage of the city at some point probably near the junction of Sixth street continued and the Hutchinson river and from this point to construct a 36-inch double-course sewer, circular or its equivalent in elliptical or egg-shaped, to one of three points indicated on the accompanying plans. The exact location of the line selected will be governed by the expense of construction as determined by further detailed surveys and soundings and by the land damages and other obstructions encountered.

The grade proposed is .001 or 1 foot per 1000 for most of the length. In some places the grade may be steeper, but from the present levels based on Mt. Vernon city elevations taken in connection with the coast survey and state topographical charts, it is not thought that any flatter grade will be necessary.

The proposed construction for the outlet, when under water, is cast-iron pipe with the Ward flexible joint.

If any channels are crossed a syphon will be put in if required. At these grades or a slight modification of them a 36-inch sewer is estimated to be ample for a population of 125,000 to 150,000. Man-holes will be constructed at the usual intervals and the outlet will be carried well down into deep water at the end. The sewage will be effectually screened within the limits of Mt. Vernon.

The accompanying plans are intended to show the following information:

Sheet 1. (Plate "K.") The general outline of the whole system from the Bronx river to the outlet at deep water in the sound. On this sheet also the proposed Grand street tunnel route is shown, which has already been approved by the

Board of Health. It also shows the proposed alternative pumping plan for the Bronx river district. By this plan all the sewage now emptying or likely, in the future, to empty into the Bronx river from Mt. Vernon, will be pumped through the iron pipe already laid into a trunk sewer now laid, which will be intercepted by the new outfall sewer to the sound.

Sheet 2 (Plate "L") shows the depths and general conditions at the proposed outlet.

Sheet 3 (Plate "M") shows, from the careful tests made as to tide and currents by competent engineers, the favorable conditions existing for the removal to a distance of the sewage and its discharge into a vast body of deep water.

SHEDD & SARLE,

Engineers

A plan was also approved by the State Board of Health on September 26, 1898, for an addition to the sewer system for portions of West and Northwest Mt. Vernon, as shown on plate "N" of this report.

NORTH TARRYTOWN, N. Y.

Change in sewer outlet

Original plans for the sewer system of North Tarrytown were approved by the State Board of Health on June 29, 1894, and appear in the 15th annual report of the Board. Subsequent changes appear in the 17th and 18th annual reports. On June 30, 1898, the State Board of Health approved a plan for a change of location of the outlet sewer; this change is shown on plate "O" of this report.

ONEIDA, N. Y.

Additions to sewer system

The original plans for the sewer system of the village of Oneida were approved by the State Board of Health on April 7, 1892, and appear in the 13th annual report of the Board. Subsequent changes were approved on June 30, 1896, and May 28, 1897, and appear in the 17th and 18th annual reports respectively.

On November 16, 1898, the State Board of Health approved a plan for an addition to the system, which plan is shown on plate "P" of this report.

PLATTSBURGH, N. Y.

Extension of sewer system

The original plans for the sewer system of the village of Plattsburgh were approved by the State Board of Health on January 29, 1897, and appear in the 18th annual report of the Board.

On January 28, 1898, the State Board of Health approved a plan for the extension of the system, which plan is shown on plates "Q" and "R" of this report.

SING SING, N. Y.

Extension of outlet sewer

The sewers in the village of Sing Sing appear to have been constructed prior to the time of the enactment of the state laws requiring sewer plans to meet the approval of the State Board of Health.

On April 1, 1898, the State Board of Health approved a plan for the extension of the outlet sewer, which plan is shown on plate "S" of this report.

SARANAC LAKE, N. Y.

Revision of sewer system

Plans for the original sewer system of the village of Saranac Lake were approved by the State Board of Health on October 27, 1892, and appear in the 13th annual report of the Board.

Owing to several causes, among them defective construction and unexpected and unforeseen development of the village and unexpected grading for the streets, the trustees determined to provide a new system, using the old one as far as it should prove economical to do so.

Accordingly plans for a new system were submitted to the State Board of Health and were approved by it on December 14, 1898.

These plans comprise: a general contoured sewer map of the village, forming plate "T" of this report; six sheets of sewer profiles; a sheet of street sewer details; a set of specifications, form for bids, contracts, etc.; and a descriptive memoir by the designing engineer, which follows:

DESCRIPTIVE REPORT ON SEWER PLANS FOR THE VILLAGE OF SARANAC LAKE, FRANKLIN CO., N. Y. GENERAL DESCRIPTION

The village of Saranac Lake is situated on the Saranac river just below Lower Saranac lake in the southern part of Franklin county, the boundary line between Franklin county and Essex county passing through the corporation, leaving the major part of the village in the former county. The village has a permanent population of about 2000 people, with a transient population of nearly as many more.

The topography is hilly and rugged, the soil sandy with many glacial boulders distributed over the surface and in the sub-soil.

The village is located immediately on the lower end of an artificial pond called Lake Flower, formed by damming the river for milling purposes. The slack water produced by this dam extends for one or two miles above the village, but below the

dam the flow of the river is strong, though the fall is principally concentrated at several ripples or rapids, two of which are caused by the contraction of the stream by highway bridge abutments, and another caused by the obstruction to the stream caused by crib piers of a railroad trestle. The ordinary discharge of the river is about 75 cubic feet per second, and on account of the extensive storage capacities of the three Saranac lakes and of Lake Flower the flow of the river at the village is but slightly disturbed by rain storms, though decidedly heavier in spring time during the melting of the snows on the drainage area. The streets of the village are not payed, but two of the principal streets have recently been macadamized and the improvement is to be extended as rapidly as possible. The village has a public water supply derived from Lake Flower, with distribution by gravity from two reservoirs located on a hill just above the village.

ORIGINAL SEWERS

Plans for a system of sewers were approved by the State Board of Health in October, 1892, and the construction of a portion of the system followed in 1893. Partly from the rapid growth of the village in extent and direction unexpected, partly from the fact that the location of some of the principal sewers does not provide sewerage where needed, and for other reasons, the board of trustees in 1897 decided to take steps for the preparation of plans for a new system of sewers adapted to the needs of the village for some time to come, the new system to use the old sewers as far as should be found expedient. As a basis on which to develop the new system a complete topographical map of the entire territory covered by the village corporation was prepared showing contour spaces five feet apart. This map is shown as Plate 1 of the accompanying plans. (Plate "T" of this report.)

NEW SYSTEM

The new system of sewers is, like the old one, on the separate system as the ease with which natural drainage is secured, together with the sandy character of the soil, makes it unnecessary

to provide for storm-water capacity for the sewers. The sewers are designed to carry, when flowing half full, 60 gallons of sewage per day per capita for the population tributary to the sewers, on the basis of 30 persons per 100 feet of sewer in the central portion of the village; 20 persons per 100 feet in the ordinary streets; and 10 persons per 100 feet in the outlying suburbs. All intersections and changes of alignment and grade are made at man-holes, and automatic flush-tanks are designed for all dead ends. No provision is made for roof-water. One-half the total daily discharge of sewage is assumed to occur in eight hours.

The minimum diameter of lateral sewers is six inches, and the minimum velocity in this size is two and one-half feet per second.

SEWER MAP

On the above basis the design of the system of sewers proposed is shown on plate 1 (Plate "T") of these plans, the various symbols being explained on the plate. Careful attention has been paid to the location in depth to meet the demands of the deepest cellars without unnecessary depth.

OUTLETS

The system has been designed to discharge all the sewage into the river at a point where Columbia avenue and Bloomingdale avenue unite at the lower end of the village, or to treat the same at disposal works on the easterly side of the river at or near the location indicated on sewer map. The river below this point is not used for potable purposes and flows through a territory almost uninhabited, and covers a stretch of about 50 miles with a fall of several hundred feet, and hence finds conditions favorable to purification during the flow. When, however, the matter of purification before discharge into the river shall become a necessity, the location chosen for disposal works is eminently suitable for the purpose and immediately adjacent to the point of present proposed discharge into the river.

TRUNK SEWER

The great distance of the upper end of the village at the extreme southerly end of Maple street from the point of discharge at the lower end of the village, taken in connection with the slight fall of the river in this distance, has made it necessary to adopt a grade for this trunk sewer which might not guarantee self-cleansing at all times; to meet this difficulty—which has been found unavoidable—it has been decided to provide for the admission of a continual stream of water into the upper end of this sewer, from Lake Flower, of from two to four inches in depth, which will insure a velocity sufficient to prevent deposition or stranding of sewage.

FRENCH VILLAGE

The extreme southeasterly portion of the village, lying west of the divide near the saw-mill, has presented considerable difficulty in settling on the best manner of providing this locality with sewerage. After careful consideration of several plans, it has seemed best to adopt the plan, shown on the sewer map, of leading the sewage of Lake street from the summit which is about 800 feet west of Jenkins street to the extreme west end, to a low point on Lake street about 600 feet west of Jenkins street and from there running a sewer line along a grade contour to and through the lowest point of the divide separating that territory from the river. At present there are no streets laid out in this territory north of Lake street. If any should be laid out in future before the sewer line is constructed, the sewer line could, if properly adjusted, be changed to run along such street lines to the divide. Provided such alteration—which should be made with great care—does not lower the present grade at the divide, the cut through the divide will not exceed 28 feet, and this cut will extend for only 200 feet, and the total distance between points of 10-foot cut will be less than 700 feet. This cutting—though desirable to avoid if possible—appears less objectionable than the alternate plans available. This line, marked on the map "Line A," will provide sewerage for probably all

the territory that will be built up for many years; if the territory lower down the valley should ever be built upon, this territory would either have to be sewered toward the lake—Lower Saranac Lake—or will have to have artificial means of lifting the sewage over the divide to the village. The remoteness of this necessity has seemed to make it undesirable to develop any plans, which with the many undertermined elements and conditions would be but suggestions at best.

NOTICE TO BIDDERS; FORM FOR PROPOSAL; AND PRELIMINARY BOND

FOR THE CONSTRUCTION OF A SYSTEM OF SEWERS FOR THE VILLAGE OF SARANAC LAKE, FRANKLIN COUNTY, N. Y.

Prepared by Olin H. Landreth, C. E., Schenectady, N. Y.

Sealed proposals will be received by the board of sewer commissioners of the village of Saranac Lake, N. Y., for the construction of sewers and appurtenances in said village, on the day of 18....

The amount of work to be done is shown on a sewerage map and plan on file in the office of said board—and the character of the work is stated in the specifications accompanying the same.

The approximate quantities of material and labor to be furnished and performed, and upon which a comparison of bids will be made, are as follows:

24-inch tile sewer complete.....	feet
20-inch tile sewer complete.....	feet
18-inch tile sewer complete.....	feet
15-inch tile sewer complete.....	feet
12-inch tile sewer complete.....	feet
10-inch tile sewer complete.....	feet
8-inch tile sewer complete.....	feet
6-inch tile sewer complete	feet
8-inch drain complete.....	feet
6-inch drain complete.....	feet
4-inch drain complete.....	feet
..... Tons of iron pipe.	

..... Manholes.

..... Double flush tanks.

..... Single flush tanks.

..... Lampholes.

..... ft. B. M. hemlock.

..... lineal feet of earth excavation and backfilling under 6'.

..... lineal feet of earth excavation and backfilling under 6'-8'.

..... lineal feet of earth excavation and backfilling under 8'-10'.

..... lineal feet of earth excavation and backfilling under 10'-12'.

..... lineal feet of earth excavation and backfilling under 12'-14'.

..... lineal feet of earth excavation and backfilling under 14'-16'.

..... lineal feet of earth excavation and backfilling under 16'-18'.

..... lineal feet of earth excavation and backfilling under 18'-20'.

..... lineal feet of earth excavation and backfilling under 20'-22'.

..... lineal feet of earth excavation and backfilling under 22'-24'.

..... lineal feet of earth excavation and backfilling under 24'-26'.

..... lineal feet of earth excavation and backfilling under 26'-28'.

..... lineal feet of earth excavation and backfilling under 28'-30'.

..... cubic yards of rock excavation.

Each proposal shall be made upon the printed form therefor furnished by said board; it shall be signed by the person making the bid and shall be accompanied by a bond for \$. signed by the bidder and two sureties, conditioned that the bidder will execute the contract and the bond for its performance, in case of award. The bidder to whom the work may be awarded shall

appear at the office of said board together with his sureties and execute the contract and bond whenever notified so to do by said board, and failure so to do within five days after the mailing of the notice to appear by said board shall constitute a default of the bond accompanying said proposal.

The amount of the bond for the performance of the contract will not be less than one-half, nor more than the whole amount of the estimated cost of the work.

No bidder will be allowed to withdraw his bid after it has been opened by the clerk of said board. The board reserves the right to reject any or all bids.

The board is to be the sole judge of the adequacy and sufficiency of the sureties offered by the bidder. Bids will be received till p. m. on the day of19.....

All proposals must be addressed to.....

Clerk of the Board of Sewer Commissioners, Saranac Lake,
- N. Y.

Signed.....

Pres. Sewer Commissioners

BOND

Know all men by these presents, That we

.....

principal and

sureties are held and firmly bound unto the sewer commissioners of Saranac Lake or to their certain attorney, successor or successors.

For which payment well and truly to be made, we bind ourselves, executors and administrators, jointly and severally by these presents.

Signed

.....

Sealed with our seals.

.....

.....

Dated day of in the year
one thousand eight hundred and

Whereas have made a bid upon the work and materials advertised to be let by the said sewer commissioners, which bid is hereunto annexed, Now, therefore, the condition of this obligation is such that if the said shall execute and perform on part, the contract in form and conditions substantially in accordance with the form and conditions hereunto annexed, and shall on part furnish the bond and security therein provided, and shall do any and all things necessary for the proper and full execution of said contract and provide the necessary and proper security for the performance thereof on part, as required by the said commissioners of Saranac Lake, then this obligation to be void; otherwise of full force and virtue.

It is understood that the sum of is to be considered as liquidated damages and not as a penalty.

Sealed and delivered in the presence of

.....

STATE OF NEW YORK, } ss.:
County of

On this day of A. D. 18.... before me, the subscriber, appeared to me personally known to be the persons described in and who executed the above undertaking, and severally acknowledged that they executed the same.

STATE OF NEW YORK, } ss.:
County of

..... and being severally sworn each for himself, says the said that he is a of the county of, in this State, and that he is worth the sum of over and above all debts and liabilities which he owes or has incurred, exclusive of property exempt by law from levy and sale under execution. Severally sworn and subscribed to before me on this the..... day of, 18..

FORM OF PROPOSAL

To the Board of Sewer Commissioners of Saranac Lake, N. Y.:

....., the undersigned, offer to furnish all material and perform all labor for the construction of a system of sewers at Saranac Lake, N. Y., in accordance with the plans and specifications on file in the office of the said board for the following prices for each class of work:

For each lineal foot of vitrified, salt glazed sewer pipe, including all specials and "Y" branches, joints laid, complete, the following price:

24-inch pipe

20-inch pipe

18-inch pipe

15-inch pipe

12-inch pipe

10-inch pipe

8-inch pipe

6-inch pipe

For each lineal foot of drain tile

8-inch

6-inch

4-inch

For each short ton of cast iron pipe in place.....

For each manhole, complete

For each lamphole, complete

For each single flush tank, complete

For each double flush tank, complete

For each improved joint below, and including pipe of 12 inches in diameter

For each improved joint above 12 inches in diameter

For each cubic yard of rock

For each 1000 feet of lumber, B. M., in place.....

For each lineal foot of trench earth excavation and backfilling, including restoration of surface of street, the following prices for each depth:

Under 6 feet in depth

6-8 feet in depth	
8-10 feet in depth	
10-12 feet in depth	
12-14 feet in depth	
14-16 feet in depth	
16-18 feet in depth	
18-20 feet in depth	
20-22 feet in depth	
22-24 feet in depth	
24-26 feet in depth	
26-28 feet in depth	
28-30 feet in depth	

Signed

.....

.....

.....

Dated,, 18.. .

SPECIFICATIONS AND CONTRACT FOR THE CONSTRUCTION OF A SYSTEM OF SEWERS FOR THE VILLAGE OF SARANAC LAKE, FRANKLIN COUNTY, N. Y. PREPARED BY OLIN H. LANDRETH, C. E., SCHENECTADY, N. Y.

SPECIFICATIONS FOR SEWERS

Excavation of trench—The ditch shall be excavated along the lines designated by the engineer and to the depths given by him. The contractor shall notify the said engineer whenever he desires a new trench or any portion thereof laid out, and shall furnish all necessary assistance required for this purpose, as well as all planks, stakes, spikes or twine that may be required. The engineer shall have the right to limit the amount of ditch that may be opened in advance of the work. Should the ditch be excavated below the depths given, the contractor shall refill the same compactly to the proper depth with suitable material at his own expense. The engineer may order any ditch braced or sheeted that he may deem necessary for the protection of life or property, nor shall the contractor receive any extra compen-

sation for such bracing or sheeting unless the same be left in the ditch by order of the engineer in writing. In such cases he will be paid for the lumber at the price bid, without additional compensation for labor in putting in position.

The contractor will be responsible for any damage done to gas, water or sewer pipes that he may encounter in the line of the ditch, and in the case of service pipes he shall replace them at his own expense. But should the line of ditch, as laid out by the engineer, intersect any gas, water or sewer main in such a manner as to necessitate its removal or relaying, the contractor will be paid for such change or removal as specified under "extra work."

In backfilling all trenches the earth must be properly rammed to a degree depending upon the nature of the pavement. In cases approved by the engineer, the contractor may use water, at his own expense, for the purpose. In general, the ditch shall be refilled in layers of not exceeding six inches in depth, and the number of rammers shall be at least half the number of men engaged in filling in. But it is distinctly understood that the contractor is responsible for the proper and lasting restoration of the surface of the street until such time as the final reserve is paid him. The ditch shall be excavated on the bottom to a width at least one foot greater than the external diameter of the sewer, and in such a manner that the pipe may be laid in perfectly straight lines without approaching nearer to the sides of the trench than four inches.

Rock—Rock will be paid for by the cubic yard. At manholes, flush tanks or other excavations in which sewers or pipes are not laid, the amount of rock paid for will be the actual amount excavated, provided such excavation does not extend further than one foot outside the ground plan of the structure to be erected, including footing course. Along the trench rock will be estimated at one eighth of a cubic yard for each foot in length and depth. The width of rock trenches at the bottom shall not be less than that specified for earth. All rock shall be excavated not less than six inches below the bottom of the pipe, and before pipe laying the ditch shall be filled to the proper grade

with suitable material and well compacted. Boulders containing more than one-fifth of a cubic yard shall be paid for as rock. Earth above rock will be paid for according to its actual depth below the surface of the ground.

Pipe-laying—No pipes shall be laid except in the presence of the engineer or his authorized inspector. The contractor shall notify the engineer whenever he is ready to lay pipe in any particular trench. The engineer shall have power to order the removal and relaying of any pipe laid contrary to his orders or during his absence from the work, but it shall be the duty of the said engineer or his assistant to be present, whenever so notified, in order that there may be no delay in the execution of the work.

Unless directed to the contrary by the engineer in writing, all pipe must be laid in perfectly straight lines from manhole to manhole, as it is a necessary condition of acceptance of the work that all pipe after being laid must be capable of inspection by artificial or natural light from end to end.

The engineer may use such means as he deems proper for giving line and grade. In general it will be done by means of a cord suspended directly over the line of pipe at a given distance above grade. The contractor shall furnish and set necessary cross planks and uprights for securing this line in position.

As a rule the joints will be made with gasket of oakum caulked into the bell, and with cement. The gasket shall be in one continuous piece and of sufficient thickness to bring the bottoms of the two pipes in the same line. The remainder of the space shall be filled with neat Portland cement pressed in by hand, the latter being protected by rubber mittens, and neatly beveled on the outside. In special cases, to be determined by the engineer, the joints shall be made as follows: A gasket of oakum, as above specified, shall be caulked into the pipe; after there shall be caulked into the pipe, with a caulking tool and a light mallet, a sufficient number of prepared strands of oakum to three-quarters fill the bell after being caulked; the joint shall then be finished with cement as above. The strands of oakum shall be prepared by saturation with cement, asphalt or

coal tar, as the engineer may direct. The contractor shall be paid for each special joint in accordance with his bid therefor.

All pipe must be covered with at least two feet of earth before the cement has set. The earth must be filled in half way up the sides of the pipe and carefully tamped around and under. No pebbles larger than one inch in diameter shall be used in this portion of the work. After the earth has been well tamped under and about the pipe the ditch shall be at once filled in for a height of about two feet above the top of the sewer and that layer tamped by hand. In this portion no stones larger than two inches in diameter shall be used. In the remaining part mixed earth and rock may be used, but no large stone shall be placed over or near a "Y" branch.

Tunnels—No tunnels will be permitted except under written permission of the engineer.

"Y" branches—The contractor will place "Y" branches opposite a designated point in front of each lot. When the latter is of greater width than 50 feet one branch will be used for every 50 feet or fraction. The total number of branches on any size of pipe will not average more than five to the hundred lineal feet. All branches must be closed with a galvanized iron cover plastered with an inch of natural cement mortar. In such cases as the engineer may think proper the covers must be cemented in the branch at least one day before the pipe is laid. The contractor must allow no person to make connection with the "Y" branch in the street except under written order from the Board. The engineer shall have the right, however, to connect with the sewers any drain that is disturbed by the construction, provided that its connection is in accordance with the adopted plumbing regulations.

Iron pipe—Iron pipe shall in general be of the thickness listed for 100-foot head. It shall be laid with lead-caulked joints in the same manner as pipe intended to carry water under pressure. It will be paid for by the ton, the price including all lead, oakum, etc., and the labor of placing in the trench.

Creeks and watercourses—Where a pipe crosses any creek or watercourse, the sewer, if of terra cotta, shall be surrounded with well-puddled clay, properly tamped. When iron pipe is used there shall be a bulkhead of clay at each end of the pipe, extending from the bottom to a point above high water. The additional cost, if any, is to be included in the price bid for that class of pipe or work.

Pipe, how measured—The pipe shall be measured from the center of the manhole, lamphole or center of the main sewer from which it starts to the center of the manhole, lamphole, flushtank or sewer at which it ends.

Manholes—Manholes in detail shall be in accordance with the drawings. They shall be constructed of hard, well-burned brick, plastered on the outside with natural cement mortar and washed on the inside with clear cement grout. They must be three feet inside diameter at the bottom and two feet four inches at the top. Wrought iron steps of the form shown on the drawings shall be placed at vertical intervals of 15 inches. The iron cover of the manholes shall weigh not less than 325 pounds. The sewer channel at the bottom shall be of split sewer pipe well bedded in concrete. In cases where the vertical distance between the bottom of the manhole and the incoming sewer is more than two feet the contractor will arrange the incoming pipes in such a manner as to give a gentle fall to the sewer and at the same time leave the pipe open to inspection. The additional work and material in such cases will be included in the price bid for manholes.

Lampholes—Lampholes will be constructed by placing a "T" in the line of the sewer and carrying vertical pipe to the surface of the ground. The vertical pipe will in all cases (under 15 inches) be of the same size as the sewer. The iron cover shall have the form shown in the drawing and weigh not less than 250 pounds. It shall rest on a foundation of concrete 6 inches thick and 2½ feet in diameter. Lamphole covers shall not be set until at least two months after the sewer is laid.

Flushtanks—Flushtanks shall have the inside diameter shown in the drawings. The side shall be carried up vertical for a distance of 4 feet above the top of the pipe. They shall be of 8-inch

brick work, plastered inside and out with cement mortar. The inside shall have in addition a coating of cement grout over the plastering. There must be at least 8 inches of concrete or brick work at the bottom. The price bid on dusttanks includes the external ventilating pipes and the water fittings to 1 foot outside of the tank wall, as well as all iron covers, discharging apparatus, etc. The inside water fittings in the flushtank reservoir will be as follows: One piece $\frac{3}{4}$ -inch iron pipe 18 inches long with brass ferrule; two $\frac{3}{4}$ inch elbows; one piece $\frac{3}{4}$ inch pipe 36 inches long; one $\frac{3}{4}$ -inch lever handle; shutoff cock, stop and waste, female screws; one $\frac{3}{4}$ inch lever handle, straightway cock, male screws, and hose connection; one $\frac{1}{2}$ -inch air or pet cock, with two $\frac{3}{4}$ -inch male screws; one $\frac{3}{4}$ -inch nipple and one $\frac{3}{4}$ -inch coupling; also two iron staples of sufficient length to pass half through the wall of the reservoir. All pipes shall be of galvanized iron and all cocks shall be of brass.

The flushtanks after completion must be perfectly water tight and discharge properly. The discharging device shall be that known as the Van Vranken automatic flushtank, of the form and size shown on the drawings.

Pipe—All sewer pipe used shall be of the best quality salt-glazed, vitrified sewer pipe. The thickness of all pipe shall be at least one-twelfth the diameter. All pipe below 20 inches in diameter shall be in 3 foot lengths. All "Y" branches shall be at least 2 feet in length and of the same manufacture as the plain pipe. No pipe shall be used that varies from a straight line more than one-half inch, or in which the difference between any two diameters of the same pipe is more than one twenty fourth the nominal diameter. This applies to bell as well as spigot end. No pipe shall be used that does not ring perfectly clear. No pipe shall be used that has a piece broken from the spigot end deeper than one inch or longer, measured in the middle of the fracture, than one twelfth the circumference. If the broken piece is at the bell end, is deeper than one inch, if its length, measured as above, is longer than one sixth the inner diameter of the pipe, the pipe must be rejected. All pipe must be smooth and free from broken blisters. Unbroken blisters must not be greater than one inch in diameter. The engineer shall determine in any particular case to

what extent fire cracks are injurious. All rejected pipe must be removed from the ground the same day. All sockets or hubs shall be of sufficient diameter to receive their full depth the spigot end of the following pipe or special without any cutting or chipping whatever, and also to leave a clear space of one-half of an inch in width all around for the cement point.

All pipes and specials shall have a depth of hub at least two inches greater than the thickness of the pipe.

Cement—All cement used in execution of this contract shall be of the best quality American natural or Portland cement. All natural cement shall have a degree of fineness so that 95 per cent. will pass through a sieve of 2500 meshes to the square inch. It shall have a tensile strength of 80 pounds per square inch after twenty-four hours (one-half hour in air) in water and 150 pounds after seven days in water. Portland cement shall have the same degree of fineness and shall have a tensile strength of 300 pounds after seven days.

Cement mortar—Cement mortar shall be composed of one part natural cement and two parts sand. It shall be well mixed dry, by measure, and only sufficient water added to make it of the right consistency.

Sand—All sand used shall be of uniform fineness, sharp and perfectly clean.

Concrete—All concrete of natural cement shall consist of one part cement, two parts sand, and three to four parts of broken stone, depending upon the fineness of the latter. The broken stone shall be of a size to pass through a two inch ring and not through a one-half inch ring. In preparing concrete the sand and cement shall be mixed first and thoroughly incorporated, and the broken stone, after being moistened, added and mixed.

Brick—All brick used shall be hard, well-burned of a good shape and emit perfectly clear sound when struck together, and shall not absorb more than ten per cent. of their weight of water after 48 hours' immersion.

Cast iron—All castings shall be of tough gray iron free from cold shuts and injurious blow holes, and of a workmanlike finish. Sample pieces, one inch square, cast from the same heat of metal in sand moulds, shall be capable of sustaining on a clear span of

four feet six inches a central load of 500 pounds when tested in the rough bar. A blow from a hammer shall produce an indentation on the edge of a casting without flaking the metal. All castings shall comply with the drawings.

Connections with old sewers—Whenever existing sewers are to be connected with the new sewers the contractor shall perform the work necessary therefor as directed by the engineer, and shall be paid therefor as extra work.

Tile drains—Tile drains of a diameter to be determined by the engineer shall be furnished and laid along such streets as he shall direct. The drains shall be of second class, salt glazed, vitrified sewer pipe; pipes having small pieces broken from other end may be used, provided it can be laid so that in no case will there be a clear opening into the drain. The pipes shall be jointed with a gasket of jute or oakum. Drains shall be laid below the sewer at a grade to be determined by the engineer. Suitable material satisfactory to the engineer shall be carefully placed over and around the drains and thoroughly tamped. Inspection pipes, made by placing a "T" branch in the drain and building up a vertical pipe therefrom to the top of the side benches of each manhole shall be furnished and laid by the contractor whenever directed by the engineer, and the cost thereof shall be included in the price bid for the drain.

CONTRACT FOR THE CONSTRUCTION OF SEWERS AND APPURTENANCES AT SARANAC LAKE, N. Y.

This agreement, made and concluded this the day of in the year one thousand by and between the board of sewer commissioners of the village of Saranac Lake, N. Y., party of the first part and party of the second part.

Witnesseth: The said party of the first part, hereinafter called the Board, has let and awarded to the said party of the second part, hereinafter called the contractor, and in consideration of the covenants and agreements herein contained on the part of the contractor, to be kept and performed by him, hereby does let and award to the said contractor the contract for furnishing all

materials and performing all labor required in the construction of
.....
.....
in accordance with these specifications and the plans on file in the office of the said board.

And the said contractor, in consideration of the letting and awarding to him of the said contract for the labor and materials as hereinafter set forth, and in further consideration of the payments to be made to him by the party of the first part as hereinafter mentioned, and under penalty of a bond bearing even date with these presents for the sum of.....
dollars, conditioned that the party of the second part will well and truly perform all the requirements of this contract and these specifications, hereby agrees at his own proper cost and expense to do all the work and furnish all the materials required in the construction of
and to furnish and complete the same on or before the.....
day of in the year

And the said contractor hereby further agrees that should the said work not be completed at the time aforesaid, or should he fail in the due performance of any part of his undertaking or become bankrupt or insolvent, the said board of sewer commissioners of Saranac Lake shall have the right, under this contract, either to relet the undertaking of said contract, or any part thereof, and upon such conditions as they may deem fit, or from time to time may engage workmen and provide all such materials, implements and apparatus, and employ the same in such manner as they may deem necessary for the proper completion of the said work. And it is further agreed that any loss, damage or deficiency that may arise in case of said bankruptcy or failure on the part of the party of the second part, shall be paid and deducted out of any money retained by said board of sewer commissioners out of any work previously performed by the party of the second part, and should any moneys so retained not be sufficient to indemnify and cover such losses, the deficiency then due shall be a charge upon the bond accompanying this agreement.

Amount of work—The approximate amount of work is shown upon certain maps and plans now on file in the office of the board, and is further stated in the advertisement accompanying this agreement. But the board distinctly reserves the right to increase or diminish the said amount to an extent not greater than one-third the money value of the work as let. Should the amount of work be increased the same will be paid for at contract prices. Should the amount be diminished it shall in no wise constitute a basis for a claim on the part of the contractor for damages or for anticipated profits.

Extra work The contractor shall perform such special work as the engineer may deem necessary for the proper execution of the contract. The contractor shall be paid for the same at the actual cost, as estimated by the engineer, with the addition of twenty per cent. for profit and compensation for the wear and use of tools. But no extra work shall be done by the contractor except under written order from the engineer. No work shall be paid for as extra work which can be regularly classified under the terms of this contract.

Plans and specifications—It is understood that when plans and specifications are mentioned, the specifications hereto annexed and the plans and drawings on file in the office of the board are referred to.

Engineer By engineer is meant the engineer employed by the board or his authorized assistants or inspectors.

Payments—Payments equal to eighty per cent. of the value of the work performed will be paid monthly on the estimate of the engineer. Said payments will be made at the first meeting of the board after the beginning of each calendar month. Only such work will be included in any monthly estimate as is in a completed condition with the surface of the street properly restored, and no payments will be made for materials delivered unless the same are laid and in place. In the case of buildings and similar structures, the engineer shall determine what proportion shall be included in any monthly estimate. Of the remaining twenty per cent. three-quarters of as much as remains after all claims, liens, repairs or unfinished work or other charges have been satisfied shall be paid at the time of completion of the

work or within 60 days thereafter, at the discretion of the board, and the remaining quarter, or five per cent. of the total, shall be paid as follows: If the time of completion of the work is before the first day of October, 189. ., the said five per cent. will be paid at the same time as the aforesaid fifteen per cent. is paid; but if the work is not fully completed on or before the said first day of October, the said five per cent. may be retained by the board until the first of May in the following year, when as much thereof as remains due will be paid the contractor. Before any monthly estimate is made the board may require that the contractor furnish proof that all bills for labor done and material furnished in the previous month have been fully satisfied or the payment thereof secured.

Repairs to surface of streets—If at any time after the completion of the work and before the reserved percentage has been paid, the surface of the street should require repairs, due to work performed on the same by the contractor, the superintendent of streets, or officer having charge of the same, shall notify the contractor, either in person or by mail, that such repairs are required and necessary and stating the amount and location of such repairs; the contractor shall thereupon cause such repairs to be made. Should he fail so to do within 10 days after the receipt of such personal notice, or 12 days after the date of notice by mail, the board may purchase materials and employ men to make the said repairs, and the cost of the same shall be deducted from any moneys due the contractor, or the same may be a charge upon the bond accompanying this agreement. But if by reason of neglect on the part of the contractor, or by the action of the elements or from any other cause connected with the work, any portion of a public street is in a condition dangerous to life or property, the board shall notify the contractor to remedy the same at once, and upon his failure so to do shall proceed as above; or should the contractor or his agent be absent from the work, personally, the board may at once proceed to remedy the said defects and the cost thereof shall be a charge upon the contractor.

Responsibility of the contractor for claims—It is agreed that the contractor shall save and hold harmless the village of Saranac

Liability against all claims for labor done or material furnished for the execution of this contract, and shall furnish satisfactory evidence whenever called upon so to do that all such claims have been fully satisfied.

Responsibility of contractor for damage—The contractor shall be responsible for all damage to life or property due to work performed by him in the execution of this contract. Should any judgment be obtained against said village due to any act of omission or negligence on his part, the amount thereof shall be deducted from any money due the said contractor or the same may become a charge upon the bond.

Incompetent workmen The engineer shall have the right to require the discharge of any incompetent or disorderly workman employed by the contractor nor shall such person be employed upon the work again.

Restoration of streets—The contractor shall restore the surface of the streets under the direction and subject to the approval of the superintendent of streets. In all cases they shall be restored to as good condition as they were before being entered upon by him. On unpaved streets the refilled earth shall not be heaped more than six inches above the normal grade, and the line of the streets must be passable to traffic within three days after the pipe is laid. Paved streets shall have the pavement temporarily replaced, and upon the final completion and acceptance there shall be no crowning or depression above or below the established grade. On such paved streets, before the payment of the final reserved percentage, the ditches must have been refilled at least three months. All pavement must be replaced in accordance with the ordinance under which it was laid; provided that in McAdam or Telford streets the surface may be compacted by ramming with heavy rammers.

All streets must be cleaned up and put in neat and orderly condition before the work contained in that portion is included in any monthly or other estimate. All surplus earth must be cleaned away, and any deficiency of material supplied by the contractor at his own cost and expense. This applies also to all manner of paving material, as crushed stone, paving blocks, as well as to all flagging, curbing and crosswalks that may have

been lost or injured by the contractor or while in his charge, provided that the curb, flag or crosswalk was in a condition to remove without damage to itself.

Removal of rubbish by board—Should the contractor leave any unnecessary earth or rubbish upon the streets during the progress of the work, the engineer shall order him to remove the same. Should he fail so to do within 24 hours the board may remove the said earth or rubbish at the expense of the contractor.

Lights and watchmen—The contractor shall place and maintain all lights, guards, and barricades that may be necessary to protect the public against accident. He shall also, should the Board so direct, have watchmen upon the line of the work at night.

Interpretation of specifications—To prevent all disputes and litigation, it is hereby agreed between the parties of the first and second parts, that the engineer shall decide all cases that may arise as to the intent and meaning of these specifications and as to the proper execution of the contract and that his decision shall be final.

Changes of plan—The engineer shall have the right, by and with the consent of the board, to make such changes in the grades, location or line of the sewers as he shall deem necessary for the proper construction of the work or to overcome unforeseen obstacles which may be encountered in the progress of the work and such changes shall in no wise annul this contract, but shall be considered a part hereof.

Prices—And the part .. of the second part agree .. to receive the following prices as full compensation for furnishing all materials, and for the use of all tools, forms and other implements, and for all labor in moving materials and executing all the work contemplated in this contract for all bailing and draining, and for all loss or damage out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen obstructions or difficulties which may be encountered in the prosecution of the same, and for all risks of every description connected with the work, and also for all expenses incurred by or in consequence of the suspension or discontinuance of said work, should the Board so direct, and for well and faithfully completing the work, and the whole thereof in

the manner and according to the plans and specifications and the requirements of the engineer under them for the following prices, to wit:

For each linear foot of vitrified, salt-glazed sewer pipe, including all special joints and "Y" branches, laid complete, the following price:

24-inch pipe

20-inch pipe,.....

18-inch pipe

15-inch pipe

12-inch pipe

10-inch pipe

8-inch

4-inch

6-inch

For each linear foot of drain tile, laid.....

8-inch pipe

6-inch pipe

For each short ton of cast iron pipe in place.....

For each manhole complete.....

For each lamphole complete.....

For each single flushtank, complete.....

For each double flushtank complete.....

For each improved joint, including pipe of 12 inches or less in diameter.....

For each improved joint in pipe more than 12 inches in diameter

For each cubic yard of rock.....

For each 1000 feet of lumber B. M. in place.....

For each linear foot of trench earth excavation and backfilling, including restoration of street surface, the following price for each depth:

Under six feet in depth.....

6-8 feet in depth.....

8-10 feet in depth.....

10-12 feet in depth.....

12-14 feet in depth.....

14-16 feet in depth

16-18 feet in depth
18-20 feet in depth
20-22 feet in depth
22-24 feet in depth
24-26 feet in depth
26-28 feet in depth
28-30 feet in depth.....

In witness whereof the parties heretofore mentioned have here-
unto set their hands and seals on the.....day of.....
in the year one thousand.....

Signed,.....
.....

Board of Sewer Commissioners

In the presence of.....Contractor..

CITY OF JOHNSTOWN

Sewer system

To the Mayor and Common Council, City of Johnstown, N. Y.:

Gentlemen—In accordance with your instructions transmitted to me by your city attorney, Mr. A. J. Nellis, that I investigate and report upon the best, most economical and complete system of sewerage possible for your city, I have the honor to submit the following report:

In entering on the investigation I interpreted the term “system of sewerage” as covering only the matter of sewerage disposal. touching the present system of sewers only so far as might be involved in modifications needed to adapt them to the system of disposal to be adopted.

Two points have been kept continually in mind as fundamental conditions: 1 That the problem of finding the “best system” is purely a financial one, taking into consideration the efficiency of results of disposal; vested interests, both municipal and private; and future expenditures. 2 That any plan adopted should

be sufficiently broad and comprehensive to meet all probable future requirements, so that whether executed now wholly or only in part, whatever is done at any time shall be permanently a part of the scheme and shall require neither abandonment nor radical modification in future. Proper attention to the second condition will render clear the fact that while the immediate occasion for the present inquiry grew out of needs and difficulties existing in the eastern portion of the corporate limits, a remedy for these needs and difficulties could not be applied locally only, but had to be sought for in a plan which should meet future needs of all parts of the city.

STATEMENT OF THE SITUATION

Before taking up the consideration of the solution of the problems involved, a statement of the situation with some statistical information will be given in order to render the discussion clearly intelligible.

Population in 1880	5,100
1890	8,800
1900 (estimated will be).....	11,000
1910 (should provide for).....	15,000
1920 (should provide for).....	20,000

The prediction of future population for a city of this size is of course attended with wide uncertainty, but the values given above have been derived from a careful consideration of all the important elements that enter into the probable rate of increase and are believed to be conservative.

Area—The corporate boundary includes an area of about 2200 acres or about three and one half square miles.

Streets—The streets opened aggregate 45 miles in length.

Sewer system—The sewerage of the city is on the *separate system* providing only for domestic sewage and some manufacturing waste and roof water. Contrary to the intention in designing the system, 22-foot catch basins have been connected with the sewers and contribute surface water and street washings.

There are about 13 miles of sewer line distributed between the several sizes, as follows:

Diameter of sewer.	Linear feet.		
6 inches.	14,800	Number of house connections.....	1,348
8 inches.	24,000	Number of houses on sewer lines not connected to sewers	115
10 inches.	10,800	Number of roof connections	372
12 inches.	7,000	Number of street catch-basins	22
15 inches.	1,300	Estimated proportion of population connected with the sewers	80
20 inches.	1,000	Number of sewer outlets into streams	20

From sewer gaugings made on nearly all the sewers during the winter of 1896-7, by city engineer James W. Miller, the amount of sewage discharged into the streams from all the sewers is computed at 1,000,000 gallons per 24 hours, or about 100 gallons per capita per day. At the time of these gaugings but little, if any, surface water was entering the sewers, and probably but little ground water, as severe freezing weather had prevailed for a long time previous to the gaugings.

This amount of sewer flow may therefore be taken to represent quite closely the element of sewage proper passing through the sewers, and as being substantially identical with and arising from the water supply.

To this must be added, during rains, the amount of roof water entering the sewers, the surface water entering through catch-basins, and during all ordinary seasons a certain amount of ground water entering the sewers by percolation through sewer joints.

The roof water entails a heavier burden on the sewers than is generally supposed: If each of the 372 roof connections averages 1200 square feet in area, a rain of one inch per hour would discharge 6,682,000 gallons per day, or more than six and one-half times the normal flow of sewage. It will be unexplainable if this abnormal burden imposed on a sewer system designed to carry little or no roof water has not in the past caused flooded cellars. Attention will be called to this point again later. Concerning the surface water admitted through catch-basins in the streets, a less definite estimate can be formed than for roof water, since the area drained by the basins is unknown; it may be said, however, that if these drainage areas for the 22 catch-basins average a half acre apiece, they will contribute to the

sewers as much water as the roof connections, making the demand on the sewers from both causes 13 times the normal flow of sewage.

The amount of ground water entering the sewers by infiltration through joints depends on the mileage and the care with which the joints were made, as well as on the porosity of the soil and depth of sewers below the ground-water surface. For these conditions at Johnstown 0.04 of a cubic foot of water per second per mile of sewer would appear to be a liberal estimate, giving 0.52 cubic feet per second for all the sewers. If at the time the sewer gaugings were made by City Engineer Miller we assume that infiltration was operating at only one-half its average rate on account of the frozen condition of the ground, which, as is well known, is sufficient to interrupt drainage far below the frost line, then one-half the infiltration, or 0.26 cubic feet per second, should be deducted from the results of the gaugings to give the sewage flow *proper*, and 0.26 cubic feet per second should be added to the result of the gaugings to give the ordinary flow of sewage and ground water. Collected for convenient comparison, these results will then appear as follows:

ITEMS.	Gallons per 24 hours.	Cubic feet section.
Sewage proper : no ground-water.....	830,000	1.28
Ground-water : ordinary condition.....	840,000	0.52
Sewage and ground-water : ordinary condition.....	1,170,000	1.80
Roof-water : storms one inch per hour.....	6,682,000	10.84
Surface water : drainage from 11 acres.....	6,682,000	10.84

Records of the sewer expenditures from 1880 to the present time show expenditures of about \$38,000, but City Clerk Crouse reports that there are a number of sewers of which there is no record, and taking prices for sewer material that have ruled during the period since 1880, it is probable that the system to the present time has cost between \$55,000 and \$60,000.

Manufacturing refuse and waste—The only manufacturing waste of sufficient amount to warrant consideration in conjunction with the matter of sewerage is the tannery and leather dressing waste and refuse. There are at least 18 establishments in the city engaged in this business, employing in the aggregate about 750 men when in ordinary operation. The character and amount of the refuse from these works require the most careful consideration of the matter of its disposal. The matter of its disposal necessitates a full knowledge of the material to be disposed of. In order to secure this information, properly prepared blanks were sent out to each of the establishments by City Clerk Crouse, by which the owners were enabled and asked to return full statistics regarding the hides, chemical and water used by them.

Returns were duly received from a majority of the concerns representing over two-thirds of the total number of men employed and three-fourths of the total output, and means were taken to secure the best estimates possible for the remainder of the plants. The aggregate exhibit for all plants representing those covered both by returns and estimates is as follows:

STATISTICS FROM TANNERIES AND LEATHER DRESSING SHOPS

Number of men employed.....	746
Weight of hides, per annum, pounds.....	5,600,000
Gallons of water, per day.....	150,000
Weight of lime, per annum, pounds.....	725,000
Weight of alum, per annum, pounds.....	230,000
Weight of salt, per annum, pounds.....	1,500,000
Weight of oil vitriol, pounds.....	45,000
Weight of copperas, per annum, pounds.....	6,000
Weight of blue stone, per annum, pounds.....	600
Weight of muriatic acid, pounds.....	4,000
Weight of soda ash, pounds.....	50,000
Weight of hypo-sulph. soda, pounds.....	18,000
Weight of bichromate potash, pounds.....	12,000
Weight of fish oils, pounds.....	500,000

Weight of flour, pounds.....	100,000
Weight of logwood, pounds.....	1,500,000
Weight of Brazil wood, pounds.....	21,000
Weight of fustic, pounds.....	320,000
Weight of hypernic, pounds.....	110,000
Weight of quercitron, pounds.....	28,000
Weight of quercitron of seeds.....	500,000
Weight of quercitron tributaries.....	1,000
Weight of the pond is tunds.....	1,100
Weight of quercitron pounds.....	15,000
Weight of alder wood, pounds.....	7,000
Weight of egg yolk, pounds.....	105,000

Accurate statistics of the amount of leather produced from the hides could not be obtained, but from estimates made by several individuals conversant with the business, it is safe to conclude that the weight of leather independently of the materials which it finally contains as filling and coloring matter, is less than one-half the weight of the hides used, indicating about 3,000,000 pounds per annum of refuse animal matter, chemical preservatives and filth. Certain portions of this refuse material are preserved for utilization as by-products, but there is good ground for the estimate that not less than one-third of the above amount, or 1,000,000 pounds and quite possibly 2,000,000 pounds of the most offensive parts of this refuse from the hides is discharged into the creek. The returns show that of the water used by the tanneries less than one per cent is taken from the city supply, that remainder being about equally divided between creek water and deep well-water. Of the chemicals tabulated, it is not to be inferred that all pass into the creek, nor that all that does pass, enter the creek in the chemical form in which they are tabulated. A considerable portion of the chemical and coloring matter used is carried away in the leather, and much of what remains undergoes neutralization and other chemical changes before entering the creek, and also to some extent after entering the creek, as not all the establishments employ the same methods and chemical, nor discharge their refuse at the same time. The coloring and filling materials are largely retained in the l'

while smaller proportions of the active chemicals in the aggregate are so retained, and this latter class of materials forms the larger portion of the whole. Of the 5,800,000 pounds of chemicals and other materials used, not including the hides, my inquiries and study of the question lead to the conclusion that not less than 3,000,000 pounds are discharged after use into the stream either in solution or suspension (except as to the iron lime), widely changed or neutralized, highly polluted. The material added to this we added 1,500,000 pounds per annum the material from hides, estimated above, the aggregate of animal refuse, chemicals, coloring matter, etc., discharged into the creek, independently of the water with which it is diluted, will be 4,500,000 pounds per annum, or 15,000 pounds per working day.

The lime, alum, copperas and, to a certain extent, the salt have a precipitating action on the organic matter of sewage and the refuse from hides, as well as on the mineral silt in suspension in the waters of the creek. Under the influence of these chemicals the precipitation will occur whenever the water bearing them is allowed to stand without appreciable motion. A linear velocity of the water of two inches per minute is as favorable for precipitation as absolute quiet. The several ponds on the Cayadutta within and below the city limits offer just the conditions needed for this precipitation to occur, and even a casual examination will show that it has occurred in all the ponds and in some of them to a very considerable and injurious extent.

The Cayadutta creek—The creek into which the sewage and tannery waste just described is discharged has, at the West Main street bridge, a drainage area of 20 square miles, and an ordinary flow of 22 cubic feet per second, an extreme low water flow of 12 feet per second and an ordinary flood volume 2000 cubic feet per second. There are within the city limits seven mill-ponds having an aggregate draught capacity of over 4,000,000 cubic feet and a capacity below the draught lines estimated as at least equal to the draught capacity, so that at ordinary flow a particle of water will on the average require about four and one-half days to pass through the series of ponds, and nearly twice its length of time to extreme low water stages of the creek.

STATEMENT OF SPECIFIC DEFECTS TO BE REMEDIED

East side sewerage—All of the territory now sewered east of Globe street is sewered into Schriver's pond or its tributaries. A very considerable extent of territory in this quarter and lying in the natural drainage area of this pond, and having no other feasible direction of sewerage, is prevented from sewerage into the pond or its tributaries by the fact that the elevation of water surface in the pond is too high to permit discharging the sewage therein by any suitable and feasible depth and grade of sewers. This territory is extensively built up and is greatly in need of sewerage and its claims are just and entitle them to careful consideration.

Schrivers pond—In an action brought by Simon Schriver, the owner of Schriver's mill property and pond, against the city (then village) of Johnstown for relief from the pollution and filling up of the said pond by sewage from the city sewers, an injunction with indemnity for past damages and costs was granted by the Supreme Court in September, 1892, and later affirmed by the General Term and the Court of Appeals. Subsequently, in May, 1896, soon after the Court of Appeals had affirmed the decision of the Supreme Court, an agreement was entered into between Simon Schriver and the city of Johnstown, by which agreement the city of Johnstown was granted the right to enter on the lands of the said Schriver and "there lay, maintain and repair, for the city's use, a public sewer upon and across the same upon such line and as deep as the Common Council of said city may deem most economical to the said city and least detrimental to the interests of the said Schriver." The agreement also stipulated that on the completion of the said sewer the discharge of sewage into the pond should cease, and that if the said sewer was not complete by September 1, 1896, the city should pay the said Schriver at the rate of \$500 per year for the right to continue the flow of sewage into his pond as in the past. It thus appears that the injunction of the courts, so far as relates to the discontinuance of sewerage into the pond, is being suspended by mutual agreement of the two parties at a cost to the city of \$500 per annum, which on a 4 per cent interest basis—the rate at which the city should be able to secure

money—represents a liability of \$12,500, and any improvement by which this obligation could be wiped out at a cost *less* than this sum would certainly be financially favorable to the taxpayers, even if it carried with it no other advantages.

Liability for further injunctions and indemnities—A careful reading of the evidence and findings in the Schriver case and an examination of the conditions surrounding the Schriver and other ponds in and below the city, can hardly fail to convince one that the result of further actions brought by similar riparian owners would probably be not less, but more severe than in the Schriver case, and also that local remedy applied to the Schriver pond alone would not reduce, but rather increase the probability of such actions being instituted. Under what appears to be an evident tendency of the courts to guard more closely now than ever the element of riparian rights in flowing water existing in the “quality” of the water, the decisions are accumulating in this and other states against the right of a municipality to use a natural stream as a sewer or means of sewage disposal, and private individuals or corporations operating manufacturing establishments certainly have no better right to pollute streams. Though these are legal matters, on which your city attorney is far better able to advise you, there are two points so directly pertinent to this matter of liability that I venture to mention them: first, the right to maintain a nuisance cannot be acquired by prescription, i.e. by customarily maintaining it in the past; second, it is not a sufficient defense against a charge of polluting a stream that others are doing the same thing or did the same thing before the act charged was done. Judge Spring, of the New York Supreme Court, has recently ruled specifically on this point in the case of an injunction asked and granted against the city of Jamestown for turning sewage into a stream.

Sanitary objections—In so far as legal liability grows out of sanitary reasons this point has been touched, but there are serious sanitary objections to disposing crude sewage and manufacturing refuse into streams beside the legal liability incurred thereby. Chief among these are: first, the general debilitation

of the health and vitality of residents near the stream due to emanations arising from the decomposing material in the stream and especially in the sludge deposited by the stream on its banks and bed; though not directly the cause of specific diseases, this debilitated condition prepares the way for specific kind of disease by rendering the individual less able to resist attack. Second, in the case of some of the air-borne diseases sanitariums are agreed that the propagation and spread of the disease is decidedly aided, if not entirely dependent on, a polluted condition of the atmosphere. Third, the influence of the example set by a municipal corporation in slovenly turning its sewage into a natural stream—which in its natural state is the very embodiment of cleanliness—is detrimental to a high idea of the necessity and value of cleanliness on the part of citizens.

It occurs in the present case that most of the establishments owning and operating water-powers are also engaged in tanning and leather dressing; from this it is quite evident that the interests of the establishments as water-power owners are adverse to these of the city and the establishments situated above, the latter being the transgressors of the riparian rights of the former; but so far as each establishment is interested in getting rid of its refuse by disposal into the stream, its interests are coincident with those of the city and of the other polluters, in devising a common means of discontinuing the infringements of riparian rights.

METHODS WHICH HAVE BEEN PROPOSED TO REMEDY THE DEFECTS

1 *Construction of sewer around Schriver's pond*—This would meet the defect of the east side sewerage, and the obligation to Schriver, but would increase rather than reduce the liability to other water-power owners, and would improve sanitary conditions only in this one pond.

2 *Purchase of the Schriver property, removal of the dam and continuation of sewerage into the stream through the pond*—This is another way of accomplishing the same results as 1, and only the same, at enormously greater expense than the former method.

On account of the strong interest that appears to attach to this plan I have examined it with greater care than its merits would warrant and have sincerely endeavored to discover the advantages which have appeared to have impressed so strongly its supporters, but have failed to find anything to commend it.

The legal difficulties in the way of acquiring the property, as set forth in the accompanying communication from your city attorney; the price to be paid for the results secured; the expense of putting the abandoned pond into condition to avoid being a menace to public health; and the fact—most important of all—that the plan does not advance the solution of the remaining difficulties of legal liability to lower owners and the sanitary objections, even for this pond cause me to consider the method as decidedly the *least desirable* of all those proposed.

3 *Intercepting sewer down the creek with disposal works.* a *Intercepting sewer*—This plan contemplates running a line of intercepting sewers along the general drainage axis of each creek, to form a system of trunk sewers for the system now built, the lines to be placed as far as possible along streets rather than along the immediate creek beds. Such a system would comprise a main line and two branches, the main line extending from the eastern boundary of the city above Schriver's pond down the valley to Stewart's lower mill, or to such lower point as may be chosen for the point of ultimate disposal. A branch line will doubtless be required in future extending from the place where the Cayadutta enters the city on the north along the general creek valley joining the main line of the intercepting sewer at or near Bridge street. A second branch may also possibly be required in future along the drainage axis of the Argersinger creek. Each of these lines should comply with the following conditions: 1 To be laid through streets or public property as far as possible. 2 To be laid deep enough to provide for draining not only all existing sewers but also such as may be required in future to sewer new territory. 3 To be of vitrified sewer-pipe and of a diameter sufficient to provide, when flowing half-full, for the following amounts of sewage and drainage:

	Gallons per day.
Sewage from 20,000 population at 80 gallons per day..	1,600,000
Manufacturing sewage, tanneries, etc.....	400,000
Infiltration of ground water, unavoidable.....	200,000
Roof water from 50 roofs for flushing dead-ends....	1,000,000
	<hr/>
Total	3,200,000
	<hr/> <hr/>

This assumes the cutting off of all catch-basins in streets and of all the 372 roof connections, except the 50 included above for flushing purposes properly chosen where most needed.

The route recommended for the main intercepting sewer is as follows: Beginning at or near the corporation line on the east side of the city where local sewerage is now needed, thence along streets in the general drainage axis to Schriver's pond; along the south side of said pond, right-of-way for which location has already been granted by the agreement between Schriver and city; along bed of creek from Perry street to Bridge street, along Bridge street to West State street; along State street to the Railroad street east of Fonda, Johnstown and Gloversville railroad station; along said Railroad street southerly crossing the tracks; passing between freight depot and coal storage house and along under bank west of freight house, passing just west of coal office; crossing West Main street just east of arch abutment; crossing Cayadutta creek immediately south of arch bridge; crossing the flat land behind houses on east side of Veghtie street; passing through or very near the southerly end of Veghtie street; along the line of Veghtie street, continued down the west bank of Leffler's pond and of Stewart's pond to Stewart's lower mill; thence to point of disposal.

The diameters, elevations and grades which this sewer should have to provide for the above flow of sewage and to keep it below existing sewer outlets and other governing points are as follows:

Elevations, grades and diameters of main intercepting sewer to provide for domestic and manufacturing sewage and fifty roof connections; no storm water.

POINTS	Elevations	Distance, feet	Grade, per cent	Diameter, inches
East Main and Chase streets.....	645.00			
West side North Perry street b idge...	633.50	2,500	.46	12
West side Market street bridge.....	631.05	850	.70	15
Bridge street bridge, east side.....	627.96	515	.60	15
Creek crossing West Main street	616.95	1,835	.60	18
West end of Stewart's dam.....	604.65	2,050	.60	20
Point of disposal .....	.....	.....	.....	.....

At the west end of Stewart's dam the above grade of invert would be about five feet below the crest of the dam and sufficiently far from the end of the dam to avoid the flume to lower mill. Below this point the location definitely is not stated, as will be explained later.

If instead of simply sewage and water from 50 roofs the sewer had been designed to carry the water from all the roofs now connected and the 22 street catch-basins, it would have had a discharging capacity four and one-half times as great as is given it above, and that would have provided only for *ordinary* storms. I have assumed, however, that it is no part of the system to provide for storm water except as such may be needed to flush ends having few connections or flat grades, and this was the assumption on which the system was at first planned years ago. The connection of roofs and the addition of catch-basins has been a subsequent encroachment on the system, which considerations of economy require to be eliminated from the system, now that important steps in extension and improvement of the system are contemplated. Drainage for surface and roof water in certain parts of the city may be even now necessary, and its necessity will increase with the increased density of building and extensions and improvements of streets, but this should be considered as a distinctly different system and entirely independent of the sewerage proper, which provides only for putrescible

matter requiring prompt removal from the city without passing into the streams, while the drainage water from roofs and street catch-basins is not only harmless in the streams—and therefore may be led there by the shortest and simplest route possible, through lines of pipe less carefully laid than for sewerage—but it is also an important element in the matter of water-power, and therefore *should* be taken into the ponds as high upstream as possible. Of course in long or severe storms the capacity of the ponds cannot take advantage of this drainage water, but there are many times when this drainage water will be welcome additions to the water supply of the ponds. While the main intercepting sewer above described provides capacity for the branch interceptors previously mentioned, it is not deemed necessary nor possible at this time to indicate details of these branches.

Any system of ultimate disposal of the sewage which may be adopted will require a location below the city; therefore the matter of this interceptor may properly be considered independently of the choice of a disposal system, and if need be, may even be constructed or construction commenced or considered before the construction of the disposal plant.

The location of the main interceptor given above has been chosen by me on the basis of a survey made by city engineer Miller under my general direction, and in my opinion, possesses advantages over a location in or along the creek-bed in 1, being always accessible for access or repairs without regard to the state of water in the creek—except, of course, at the two creek crossings; 2, as being in public rather than private property for a considerable portion of its length; 3, as being several hundred feet shorter than a location following the creek closely, and therefore not only cheaper from length saved, but with steeper grades on account of the shortened length; 4, lessened cost per linear foot than a submerged location in the creek-bed would permit with its attendant cost of cofferdamming and pumping.

I have not submitted an estimate of cost of this interceptor, as this necessarily includes the item of rock-excavation along the line, on which I have no information, and to secure which will

require soundings and some borings to ascertain the depth at which rock may be found, as there is but little doubt that rock will be met at certain places, especially across the low flat land east of Veghtie street.

b *Disposal works*—For the purpose of a clear understanding of the several processes and methods of disposal entitled to consideration, it may not be out of place to state briefly the salient facts and fundamental principles which govern the general question of sewage reduction: Sewage in general may be defined as domestic and manufacturing putrescible waste, diluted with the water by which it is carried. Domestic sewage comprises the excremental matter, kitchen waste—not disposed of as coarse garbage, bath and laundry water, stable droppings and cleanings, etc.; while manufacturing sewage includes the refuse from industrial operations not disposed of as by-products or as dry refuse, and naturally varies widely in its composition according to the industries considered. In the present instance tannery refuse is the predominating element in the division of manufacturing sewage.

Sewage is therefore water with organic and inorganic matter carried by it both in suspension and in solution; being largely putrescible and containing in great numbers bacteria, both pathogenic and non-pathogenic, its prompt removal beyond limits of harm is essential. The organic matter of sewage is reduced to inorganic forms by bacterial action, i. e. the process is not simply an unaided chemical one, but is accomplished by the aid, if not the direct action, of myriads of low organisms termed *bacteria*. There are two chief divisions of the species of bacteria which attack and reduce sewage: 1. Those which require for their subsistence and action an ample supply of oxygen; in this respect they resemble animals; these are termed the *aerobic* bacteria. 2. Those which do not require oxygen for their subsistence and action; in this respect they resemble plants or vegetables, and are called after the classification of Pasteur, the *anaerobic* bacteria.

The respective characteristics of these two widely different

species may be shown by a parallel presentation of these characteristics, thus:

AEROBIC BACTERIA

Require oxygen.
Reduce organic matter to inorganic matter, principally to forms of nitrogen, from which the action is called "Nitrification."
Give rise to no odors or harmful gaseous emanations.
Operate slowly on solid organic matter.
Operate rapidly on organic matter in solution or finely divided in suspension.
Effect complete reduction to inorganic forms.
Injuriously affected by low temperature, though not destroyed except by long continued extreme cold.
Destroyed or action suspended by numerous antiseptics.

ANAEROBIC BACTERIA

(A) Do not require oxygen.
(B) Reduce the solid forms of organic matter to liquid forms, lower in complexity, whence the action is called "Liquifaction."
(C) Give rise to putrid, noxious odors and gaseous emanation.
(D) Operate rapidly on solid organic matter, reducing it to liquid form.
(E) Operate but slightly or slowly on organic matter in solution or in finely divided suspension.
(F) Effect only partial reduction to inorganic form, but reduce to lower forms of organic matter.
(G) Injuriously affected by low temperature, though not destroyed, except by long-continued cold.
(H) Destroyed or action suspended by numerous antiseptics.

An examination of these characteristics will show us that if we desire to render sewage entirely harmless by reduction to inorganic matter we must employ the aerobic bacteria, and that if we would have them serve us sufficiently we must supply them with the organic matter finely divided in suspension, or better in solution; also that we must supply them with ample supply of oxygen. Both these varieties of bacteria can be made to grow in masses of sand, gravel or soils, provided they are furnished with their peculiar favorable conditions. The anaerobic bacteria will subsist and operate in the interior of the solid masses of putrescible matter if they once gain a foot-hold, as in the putrefaction of vegetables and meat. But the aerobic species, the one we wish to employ cannot for a long time subsist in the interior of soils or other masses through which sewage is allowed to percolate, unless we introduce into the mass supplies of oxygen, for the sewage carries no oxygen. We must, therefore, interrupt the flow of sewage through the soil and introduce oxygen. The method by which this has mainly been accomplished in the past has been to stop the supply of sewage flowing onto soil—as in sewage irrigation, or onto the filtering material in the case of filtration—and to allow the sewage by its own subsidence down through the mass, to draw down air furnishing the needed oxygen to the aerobic bacteria, after which they may be again treated to another dose of sewage. This gives rise to the system of *inter-*

mittent filtration, and in sewage irrigation the interruption is similarly secured.

It is thus evident that sewage filtration or irrigation is in no sense an act of straining as many suppose, but is a complicated but systematic biological operation. Remembering that the aerobic bacteria do not operate rapidly on the solid particles of sewage while the anaerobic species do, we may employ the latter—provided the means of harnessing them for this service can be made successful—to break up for us the solid matter to be turned over to the aerobic bacteria to finally reduce to inorganic matter. Intermittent filtration and irrigation are well known methods which have stood the test of time and experience with success except as to the *rate* at which sewage can be reduced, and this rate is kept low—and large areas are therefore, needed—on account of the solid matter which the sewage contains and on which the reducing bacteria operate slowly.

Filtration alone can be operated at a rate rarely exceeding 80,000 gallons per acre per day, which for Johnstown would require at present from 15 to 20 acres even if all roof water and storm water were eliminated, and would require the area to be increased with the growth of population; and of course the areas would have to be very much larger than 15 or 20 acres if the storm and roof water are left in with the sewage and have to similarly sent through the filtering material.

If however the solid matter in sewage can be removed by screening or by reduction to liquid matter, then the rate of filtration can be increased to several hundred thousand gallons per acre per day. If ordinary screening is done, then the problem of disposing of the sludge screened out of the sewage is scarcely less troublesome than the original problem of the sewage, for it is highly putrescible and cannot be allowed to accumulate nor can it be discharged into streams. Two new methods for the reduction of the solid matter have recently been proposed and are receiving much attention, trial and experimental investigation, with promise of considerable success. If present claims for the methods shall be only partially realized, either one will enable

sewage to be filtered at several times the present rate by intermittent filtration where the total sewage is sent to the filters, with a corresponding decrease in the size of filter beds and proportional reduction of first cost. These two methods for disposing of the solid matter of sewage and permitting a higher rate of subsequent filtration, are 1 The septic tank method; and 2 The coarse filter method. Both of these methods look to the anaerobic bacteria to reduce to liquid form the solid matter of the sewage, preparing it for the ordinary filters. The septic tank method stores the sewage in its original form for about 24 hours in closed tanks free from access of air, thus producing conditions favorable for the anaerobic bacteria to reduce the solid matter in the sewage to liquid form, except the small amount of mineral ash which settles and requires removal after it has accumulated in amount. The method of coarse filters includes filling coarse filters of coke or broken stone with the sewage and allowing them to stand without motion or flow for some time, during which the anaerobic bacteria develop and break up the solid matter in the sewage, after which the total sewage is drawn off onto ordinary sand filters. Another improvement of which much is predicted is the method of artificial aeration of filtering material by which it is thought possible to carry on the process of artificial aeration of the aerobic bacteria in filtering material without suspending temporarily the filtering action. As the period of time now required to allow the intermittent sand filters to aerate themselves after stopping filtration is never less than one-half the length of time they have been in operation, it is plain that if continual aeration can be successfully carried on while filtration is also going on, that only two-thirds the filtering area will be requisite to treat a given amount of sewage.

Both these classes of improvements, the anaerobic reduction of solid sewage by septic tank and by coarse filters, and the artificial aeration of filtering material, give strong promise of accomplishing their respective results, and therefore of decidedly reducing the areas and the cost of sewage filters, which has always been the objection to the method of sand filtration, and has made

chemical reduction its superior in the *single* element of cost of installation.

Chemical disposal or more properly chemical precipitation, does not attempt the ultimate reduction of the putrescible matter in sewage to inorganic and harmless form, but looks to the separation of the solid matter of sewage from the liquid matter, by precipitating the former by chemical coagulants such as lime, alum, salts of iron, etc. These chemical precipitants are also somewhat antiseptic in character and to that extent stop or temporarily *suspend* bacterial reduction of the organic matter in sewage, but as the antiseptics are soluble, they are soon washed or dissolved out of the sludge or solid matter and putrefaction is resumed. Dependence is therefore only placed on the antiseptic element to allow the sludge to be removed to land as fertilizer, or absorbed by saw-dust or charcoal or burned, before putrefaction is resumed. Generally the liquid matter remaining after the precipitation of the solid sludge, is run off into streams if a high degree of purification is not imperatively demanded before disposal into the stream.

If such high degree of purification is demanded, then filtration must follow chemical precipitation, making the total process expensive.

In the case of Johnstown the requirements would probably be fully met by chemical precipitation without further purification by filtration, as the stream is not used for a potable water supply, but the cost of simple chemical precipitation even without filtration will be more expensive than filtration if the process described for accelerating the rate of filtration shall prove even fairly successful.

In the light of these comparatively recent improvements which promise at least something of success, but of which not enough is yet known to warrant me in recommending the adoption of either of them, I am of the opinion that the best interests of the city will be met by deferring the selection of a disposal system till investigations and trials now going on shall give more definite results, though as I have already stated, this does not imply

the necessity or even the desirability of delay in the matter of the intercepting sewer.

COOPERATION WITH GLOVERSVILLE

All the considerations which make it necessary for Johnstown to improve its sewerage in the direction of disposal, apply with equal force to the city of Gloversville; if both cities are to adopt sewage disposal, it will be decidedly to the interest of the taxpayers of both cities to cooperate in constructing and operating a disposal system in common. Examples of this municipal cooperation are not unusual and are recognized as both feasible and highly desirable from an economic standpoint. Municipal consolidation is not at all necessary to carry out the measure. It would be manifestly inappropriate to discuss details of this proposition till a desire or willingness to consider the important questions involved should be expressed by the people or representatives of each city.

FINAL RECOMMENDATIONS

I beg leave very respectfully to recommend to your honorable body the following:—

1 That the system of intercepting sewers outlined above be adopted and that the main interceptor be placed under estimate and early construction.

2 That the matter of a choice of a system of disposal be for the present deferred till further information and results of trials of recent improvements shall be available on which to make a final judicious selection.

3 That proper steps be taken to ascertain whether the people or authorities of the city of Gloversville would care to consider the matter of municipal cooperation in the building and operation of sewage disposal works.

I beg also to submit a report of examinations of three samples of creek water, made by Dr. Willis G. Tucker, chemist of the State Board of Health, as bearing directly on the subject of a choice of disposal system.

In conclusion it gives me pleasure to acknowledge the efficiency and value of the service rendered by your city engineer, Mr. James W. Miller, in advancing the work of this inquiry. My data are largely drawn from sources which he has materially aided in making available. Especially is this the case with the maps and surveys which he has made for this purpose, though of permanent value for other uses.

I also desire to acknowledge the valuable assistance of city clerk William Crouse in procuring needed data.

OLIN H. LANDRETH,

Consulting engineer

As explanation of the delay in presenting this report it is proper to state that three months ago this report was completed in which I then recommended the adoption of one of the older and well-known methods of disposal, but delayed its presentation till I might secure information on the more recent methods now being thoroughly tested.

As a result of this delay and later results, I am led to advise the suspension of a decision for the present as recommended.

February 20, 1899.

SCHENECTADY, N. Y., *July 5, 1898*

Mr. ANDREW J. NELLIS, *City attorney, Johnstown, N. Y.:*

Dear Sir—In the investigations preliminary to a report on the best system of sewerage and sewage disposal for your city some questions have arisen involving legal points on which I would be glad to have your opinion as legal adviser to the city of Johnstown. These are:

Among the several plans proposed for the disposal of the city sewage, one is being urged which involves the purchase of the Simon Schriver mill-pond and the tract of land owned by him on which the mill-pond is situated; the removal or the partial removal of the mill-dam; and the sale of the land surrounding the present pond, or its retention for purpose of future sale or for other city purposes than sewerage.

Question 1. If this measure should be found desirable from technical consideration, are there any legal difficulties in the way of its accomplishment?

Question 2. Are there any encumbrances or easements on the tract of land in question, which would prevent the city receiving from the said Schriver an absolute and clear title to the entire property included within the bounds of the tract in question?

Question 3. The final settlement of the action brought by Simon Schriver against the village of Johnstown and argued successively before Hon. Richard L. Hand, referee, the General Term, and the Court of Appeals, was finally reached by an agreement dated May 4, 1896, between the said Simon Schriver and the city of Johnstown, in which agreement the following clauses occur:

First. Said Schriver consents that, and irrevocably authorizes said city and its agents to enter upon his lands eastward of North Ferry street in said city, and there lay, maintain and repair, for the city's use, a public sewer upon and across the same, upon such line and as deep as the Common Council of said city may deem most economical to the said city and least detrimental to the interests of said Schriver.

Second. The deposit of sewage and the flow of sewage in and upon the said lands of Schriver from or through any sewer now or hereafter controlled by the said city or any department thereof, except through the said sewer to be laid, to be discontinued upon the completion of said sewer.

Third. Said sewer to be completed before September 1, 1896, or at the option of the said city, said city to pay to said Schriver at the rate of five hundred dollars (\$500), per year for the right to continue the flow of sewage in and upon said Schriver's lands as at present."

The first of September, 1896 having passed without the completion of the said sewer through the lands of the said Schriver, or the commencement of any steps leading to its construction, has the city of Johnstown still the right to exercise the option to build and maintain the sewer it acquired by the said agreement and which it unquestionably possessed up to September 1. 1896, or has the option lapsed?

Question 4. If the option granted by said agreement has lapsed, has the city of Johnstown the right to terminate the annual payment of five hundred dollars to the said Schriver upon acquiring by condemnation a new right to lay and maintain a public sewer and upon the completion and use of the said sewer under such condemnation?

Very truly yours,

OLIN H. LANDRETH

JOHNSTOWN, N. Y., *July 8, 1898*

OLIN H. LANDRETH, *Union College, Schenectady, N. Y.:*

Dear Sir—Replying to your inquiry of July 5th, as to matters appertaining to the question of sewerage and sewage disposal for the city of Johnstown, I beg to say in reply to the first question therein indicated, that the city of Johnstown can, being first authorized by a tax election, purchase any property requisite for its public use, but it cannot purchase any property with a view to selling it again; it cannot purchase a large parcel of real estate, like the Schriver property, with a view of selling a portion and retaining the balance for public use.

Replying to the second question therein contained, I beg to say that there are no incumbrances or easements which could not be readily released; nothing which would prevent the city from obtaining a clear title to anything they had authority to purchase.

My construction of the agreement made by Mr. Schriver with the city of Jamestown and of the clauses thereof quoted in your letter, is that the city of Johnstown may at any time lay, maintain and repair the sewer therein described. Since they did not do it before September 1, 1896, they must pay Mr. Schriver at the rate of five hundred dollars (\$500) per year from that date until the sewer is completed ready for use, when they may and must discontinue the flow of sewage in and upon Schriver's lands, except through said sewer, and at the same time the necessity to pay at the rate of five hundred dollars (\$500) a year will cease.

Yours respectfully,

ANDREW J. NELLIS

ALBANY, N. Y., December 8, 1898

Dr. B. T. SHELZER, *Secretary, State Board of Health of New York,*
Albany:

Dear Sir—In conformity with instructions received from you in July last, I have made analyses for the city of Johnstown, and by arrangement with Professor O. H. Landreth, C. E., of Schenectady, of three samples of water taken from the Cayadutta creek and its tributaries, which flow through the city of Johnstown. The samples, labelled Nos. 1, 2 and 3, were taken by Professor Landreth, who forwarded them to me, and the general plan for the examination, which, under existing circumstances, was necessarily somewhat limited in its extent, was agreed upon between us.

From a sketch accompanying the samples it appeared that No. 2 was taken at the railroad bridge from the Argersinger creek and near its confluence with the creek flowing from Schriver's pond; No. 3, from the latter creek just above its confluence with the Argersinger creek, and No. 1 from the Cayadutta creek below Stewart's pond. I was not present when these samples were taken, but on September 24th, and subsequent to the examination of the samples, I went to Johnstown, and, in company with Professor Landreth, visited the localities and made a general inspection of the streams and ponds and their surroundings. We inspected Schriver's pond and the stream tributary thereto and followed its outlet to its point of confluence with the Argersinger creek near the railroad bridge, and also the canal connecting the Cayadutta creek with the Argersinger creek, from which locality we followed the creek down for some distance toward the point at which sample No. 1 had been taken. Recent rains had occurred and the streams were running pretty full, but the waters showed much floating and suspended foreign matter and filth, due to the sewage and tannery wastes turned into them within the limits of Johnstown, and, as I am informed, at Gloversville above. The banks and bed of the stream at various points showed deposits, indicating that precipitation had taken place in the water, and I am informed that such deposits may be

observed along the course of the creek for several miles below the city. Such deposits as these are generally found in streams polluted like these and are due in part to natural sedimentation; in part to the precipitation occasioned by the finely divided clay carried in the water, and in part, very probably, to the action of chemical agents added to the waters by the tanneries and manufacturing establishments upon the organic matters which they contain.

I have been asked to give an opinion, based upon the results of the chemical examination of the samples and of my inspection of the streams and their surroundings, as to (a) The effect the sewage and the tannery waste and chemicals will have on the sanitary condition of the creeks, both waters and bed, through and below the city. (b) The effect the tannery waste and chemicals would probably have on the bacterial action of intermittent sand filters if such should be adopted. (c) The effect the tannery waste and chemicals would probably have on the precipitating action of chemical precipitation works if such should be adopted.

The results of the examinations made, expressed in parts per 100,000, are as follows:—

Color and appearance—Yellowish tint; slight turbidity; considerable brownish sediment. All essentially alike. Odor at 100 degrees Fahrenheit. All have slight odor.

	No. 1.	No. 2.	No. 3.
Chlorine in chlorides	2.90	3.60	1.20
Total solids	30.80	32.60	35.60
Total organic and volatile matter.....	10.20	11.20	8.80
Total mineral matter.....	20.60	21.40	26.80
Dissolved solids ..	26.60	27.80	33.80
Dissolved organic and volatile matter	9.60	10.80	8.20
Dissolved mineral water.....	17.00	17.00	24.60
Suspended solids.....	4.20	4.80	2.80
Suspended organic and volatile matter	0.60	0.40	0.60
Suspended mineral water	3.60	4.40	2.20
Alumina	Trace	Trace	Trace
Calcium as su'phate.....	15.20	13.20	16.20
Arsenic	None	None	None

From these results it appears that the waters are much less impure than might have been expected when the amount of polluting material discharged into the streams is considered. If the samples fairly represent the average quality of the waters of the streams, as I believe to be the case from the manner in

which they were collected, it is evident that precipitation has removed much of the matter added by the tanneries and as sewage. Chlorine, present as chlorides and chiefly as sodium chloride or common salt, may ordinarily be taken as a reasonably fair measure of past pollution by sewage, since it is contained in all sewage and is probably in no way materially removed from the water. In the present case, however, it is probably in part added by the tanneries which employ common salt and some hydrochloric acid in their operations, and it is very high in the case of Nos. 1 and 2 when compared with the quantity in the waters of ordinary streams, and even such as receive considerable sewage. Further comparison of the results shows that No. 3 while containing more solids in solution, contains less in suspension, and more organic and volatile matter, and more chlorine than do the other samples. In No. 1 the chlorine and organic and volatile matter are less than in No. 2 and more than in No. 3. The color, general appearance and odor of the three samples were very similar, and lime was the chief mineral constituent of the solid residue in each case. They all contained traces of alumina, and although alum is largely used by the tanneries it was not to be expected that it would appear in the waters as such in appreciable quantities. Arsenic also is said to be employed, but no trace of it was detected in the samples.

Replying to the questions propounded and above stated, I would say that in my opinion, based upon the chemical examination of the samples submitted and my inspection of the streams, (a) that the discharge of sewage and of tannery waste into the streams and ponds contaminates the waters, both waters and beds, below the points of discharge, rendering them objectionable and offensive to the senses and occasioning deposits in their beds and along their banks which, exposed to the air at low stages, and especially during hot weather, must evolve unpleasant and deleterious odors as a result of the decay of the organic matters which these deposits contain. So long as the present defilement of these streams continues it is evident that the nuisance occasioned by them will be increased by exposure of the sides and

BARREN ISLAND

STATE OF NEW YORK, EXECUTIVE CHAMBER

Order directing the abatement of certain public nuisances at Barren Island, Kings county.

Whereas, the State Board of Health upon the complaint of various parties residing in the vicinity of Barren Island and acquainted therewith, have examined into certain alleged nuisances existing at said Barren Island, and has taken testimony both upon the part of the complainants, as well as of the individuals, firms and corporations alleged to be conducting offensive business and trades at said island; and

Whereas, on or about the twenty-fifth day of October, 1897, the said Board of Health duly made its report, upon which report the approval of the Governor was endorsed the seventh day of January, 1898, and which said report was duly filed in the office of the Secretary of State on the seventh day of January, 1898, by which report, so approved as aforesaid it appears that divers offensive trades and business are carried on upon said Barren Island, in such a manner as to become a public nuisance, to which report reference is hereby made; and

Whereas, the said State Board of Health, in and by its said report has recommended that an order and proclamation made by His Excellency, Governor Hill, declaring the business and trades of Peter White's Sons, E. Frank Coe, The Barren Island Oil and Guano Company, and the Barren Island Fertilizing Oil Company to be public nuisances, etc., be amended and modified by declaring to be public nuisances the business, trades and establishments of each of the individuals, corporations and co-partnerships hereinafter specifically mentioned, and ordering the same abated on or before April 1, 1898, unless each of the said firms, individuals, and corporations shall sooner obtain a permit of the

New York State Board of Health and the New York city board of health to carry on their said noxious trades in conformity with sanitary rules and regulations prescribed by said boards:

Now, therefore, I, Frank S. Black, Governor of the State of New York, in pursuance of the statute in such case made and provided, and by reason of the premises hereinbefore recited, do hereby declare to be public nuisances the business, trades establishments maintained and carried on at Barren Island, in the county of Kings, State of New York, by the following firms, individuals and corporations, to wit:

E. Frank Coe Company, a corporation engaged in the manufacture of commercial fertilizer;

The Barren Island Fertilizer and Oil Works, a corporation engaged in the manufacture of fish-oil and fish scrap;

The New York Sanitary Utilization Company, a corporation engaged in reducing the garbage of New York city and Brooklyn, and manufacturing certain commercial products therefrom;

E. J. McKeever & Brother, a co-partnership consisting of Edward J. and Stephen W. McKeever, engaged in rendering dead animals, collected principally from the city of Brooklyn; and

P. White & Sons, a co-partnership engaged in rendering dead animals, collected chiefly in the city of New York.

And I do hereby order said nuisances to be abated and direct the said individuals, firms and corporations, on or before April 1, 1898, to secure a permit from the New York State Board of Health and the New York city board of health, and to conform their various trades, business and vocations hereinbefore specified, to such sanitary rules and regulations as may be, before that date, prescribed by said boards.

Given under my hand and the privy seal of the State at the capitol in the city of Albany, this tenth day of January, in the year of our Lord one thousand eight hundred and ninety-eight.

FRANK S. BLACK

By the Governor:

GEORGE CURTIS TREADWELL,

Acting private secretary

ALBANY, *July 12, 1898*

HON. FRANK S. BLACK, *Governor of the State of New York, Albany, N. Y.:*

Dear Sir—I have the honor to enclose herewith for your information, copies of two reports made to this Board by Prof. Olin H. Landreth and Orville Lewis, covering their examination of plants located on Barren Island.

Very respectfully,

BAXTER T. SMELZER,

Secretary

STATE OF NEW YORK, EXECUTIVE CHAMBER.

ALBANY, *July 20, 1898*

BAXTER T. SMELZER, M. D., *Albany, N. Y.:*

Dear Sir—I am directed by the Governor to acknowledge the receipt of your letter regarding the Barren Island matter, together with report.

Very truly yours,

WM. M. GRIFFITH,

Private secretary

CATSKILL SHALE BRICK AND PAVING CO.

ALBANY, *October 12, 1897*

Honorable State Board of Health, Albany, N. Y.:

Sirs—I enclose you herewith a petition, a letter, and some samples concerning an alleged nuisance in Catskill, N. Y.

The Governor is anxious that you should investigate that matter and make a report thereon with a view of mitigating the so-called nuisance if possible. The samples which I herewith send of bolts show the effect of the smoke and gas during ten days exposure. The samples in the envelope show the effect of the smoke and gas in a chamber in one night.

Very truly yours,

WM. M. GRIFFITH,

Private secretary

Edward Crispell,
 Geo. N. Brandow,
 G. W. Besadors,
 Benjamin Wey (p. L. B. W.),
 John L. Kennedy and family,
 A. A. Lounsbey,
 W. A. Nickerson,
 Patrick Walsh and family,
 Mary Gavigan and family,
 B. F. Decker and family,
 P. Gavigan and family,
 Chas. Halcott and family,
 Maggie Brandt and family,
 E. J. Reynolds and family,
 Julius Kircher and family,
 H. S. Scutt,
 J. L. Spoor,
 Wm. Kruger,

Charles Egnor,
 Michael Gavigan,
 A. Van Pieper,
 C. G. Hazard, pastor Presbyt-
 ian church,
 John R. Johnson,
 Margaret Johnson,
 Lewis P. Clarke,
 John H. Spoor,
 Jacob Conine,
 Thursten Millett,
 Clark Lynes,
 Henry B. Spencer,
 D. B. Thorpe,
 W. E. Thorpe,
 F. C. Griffin,
 Emily H. Cooke.

**IN THE MATTER OF THE INVESTIGATION OF THE STATE
 BOARD OF HEALTH INTO AN ALLEGED NUISANCE
 CAUSED BY THE EASTERN PAVING BRICK COMPANY
 AT CATSKILL, NEW YORK.**

To the State Board of Health:

Gentlemen—In pursuance of an order of the Governor directing the State Board to investigate into the said nuisance, your committee appointed for that purpose met at the Irving House, Catskill, N. Y., July 21, 1898, and after considering the complaint of the petitioners visited the locality and works where said nuisance was alleged to exist and made a personal inspection of the same. After observing and inquiring into the methods employed in the manufacture of paving brick at such place, your committee notified the petitioners and the superintendent and other persons representing the manufacturing establishment, that a formal hearing would be given at which both sides would be represented.

Many lay witnesses, physicians and health officers of the village of Catskill were examined in behalf of the petitioners, and

such witnesses and representatives of the establishment as appeared were also examined under oath and their testimony reduced to writing.

The Eastern Paving Brick Company is a corporation engaged in the manufacture of paving brick at Catskill, N. Y. Its officers are H. P. Ellis, president; Jonathan Potter, vice president; B. G. Boren, general manager, and James F. Hughes, secretary and treasurer. The brick manufacturing establishment complained of was constructed in July, 1894. The company that constructed the plant failed and the plant is now leased by the Eastern Paving Brick Company from the Woodland Avenue Savings and Loan Company of Cleveland, who are the trustees of the bonds of the Catskill Shale Brick and Paving Company.

The plant is situated along Catskill creek and between said creek and the main street of said village which has the same general direction as the creek and has a frontage of about 700 feet along the creek. The main street is much higher than the creek, and on a level with the tops of the chimneys extending from the brick kilns. There are ten kilns each having 24 chimneys.

The process of manufacturing is briefly described as follows: The shale is obtained from the hills some ten or eleven miles from the village on the line of the Catskill Mountain Railway and is brought down by cars over the road to the plant and dumped over trestles. The clay is brought from Leeds some four miles away in much the same manner. The shale is passed into what are called dry pans, crushed and then taken over belts and passed through screens so that the finer material may fall through. This with the clay is then taken into what is called a pug mill and is there pugged or mixed, then it is carried on again by the endless belts and passed through another pug mill and from there to the brick machines. It goes into the brick machines in a mass more or less damp, and is passed out under steam through a die the proper size. From the brick machine it is passed over another endless belt and carried into what is called a side cutter which cuts the bricks into shape. The bricks are then put on to a car and taken into the dryers to take out the dampness. They are then taken and placed into kilns fired slowly at first until the kiln is gotten up to its proper degree of heat and kept at that

heat for a certain length of time until the brick shows a decrease in size or what we call shrinkage. The fire is then taken off and the kilns allowed to cool.

The average daily output is about 105,000 bricks, and about 80 tons of soft coal are consumed, and whatever gas, smoke and soot are generated pass out through the chimneys and smoke stacks. A large volume of soot, smoke and coal gas is given off and swept by gusts of air over the lawns, through the windows and into the homes of many people living on the north and east of the works.

From the investigation made by your committee and the testimony taken which is herewith submitted and made a part of this report, we make the following findings of fact:

1 That by the operation of said machinery great and unnecessary noise is made and created, and that said kilns when in operation constantly give out great quantities of heavy black smoke, coal gas, noisome and foul smells and odors, which said smoke, gas and odors, owing to the location, construction and methods of operating said kilns, are carried directly into the houses and living and sleeping rooms of a large number of people residing in said village both day and night, making it necessary for them to keep doors and windows closed and causing much sickness and ill health and constituting a nuisance injurious to life and health.

2 That the manufacturing of paving brick by said corporation as at present operated and constructed, constitutes a nuisance injurious not alone to the enjoyment of the property rights of the people but to the public health.

The State Board of Health would therefore recommend that said corporation be required to construct a single water tower or smoke stack of sufficient height to carry off the smoke, soot and gases given off in the manufacture of brick, and that the 240 separate chimneys through which the smoke, soot and gas are now emitted, be connected with said water tower or smoke stack so as to discharge all smoke, soot and gases through the same at a sufficient height above the residence portion of said village as not to interfere with the health and comfort of home.

Your committee would further recommend that the operation of said plant be declared a nuisance and that the same be suspended on or before April 1, 1899, unless said water tower or smoke stack be sooner constructed and the operation of said plant be so carried on and conducted as not to interfere with the health and comfort of the residents of said village.

All of which is respectfully submitted,

DANIEL LEWIS,
OWEN CASSIDY

SARATOGA LAKE

ALBANY, October 5, 1898

Honorable State Board of Health, Albany, N. Y.:

Sirs—I am directed by the Governor to enclose herewith one petition and one letter regarding nuisances in different localities of the state.

Will you kindly take the matters up?

Very truly yours,

WM. M. GRIFFITH,
Private secretary

To His Excellency HON. FRANK S. BLACK, Governor of the State of New York, Albany, N. Y.:

The petition of the undersigned residents of the county of Saratoga respectfully shows as follows:

That Saratoga lake in said county is about five miles long and about two miles wide, and is about four miles from the village of Ballston Spa and Saratoga Springs, and that Saratoga Springs is a summer resort, visited by thousands of tourists every summer, and to Saratoga lake is the chief drive and resort; that said lake has been for a great many years a prominent and attractive resort for fishing, hunting and boating, and for the past few years offensive odors have arisen from the waters in the said lake near the shores, causing annoyance and breeding disease; that large numbers of fish have been picked up dead along the

shores of the lake, and the shores thereof in certain portions are covered with filthy and noxious material, offensive to the eye and giving out offensive odors: that in the opinion of your petitioners, unless measures are taken to prevent the defilement of said lake, and its condition continues to grow worse, all the fish in the lake will be killed and people will cease to occupy cottages on the shores, and it will cease to be attractive as a summer resort.

That the causes of defilment of the waters of the lake are various; that they proceed from the discharge of the sewerage of the village of Saratoga Springs and Ballston Spa into said lake, and from the discharge into said lake of chemicals and refuse from certain manufacturing establishments located in or near the village of Ballston Spa.

That it would be impracticable to apply to the local boards of health for relief as Saratoga lake is situated in several towns.

Your petitioners therefore pray that you will exercise the powers conferred upon you by the Revised Statutes and order the State Board of Health to make the necessary examination, with the view of having the nuisance complained of abated or removed, and your petitioners will ever pray.

Dated, October 1, 1898.

Thomas C. Luther,
Mary C. Luther,
Nathaniel B. Arnold,
Benj. F. Freeman,
P. A. Post,
Benj'n T. Fisher,
Joseph Smith,
George White,
Charles Kirkpatrick,
Joseph Gilmore,
Archie Paul,
A. J. Whitehouse,
Geo. C. Lauson,
Mrs. Sarah Hall,
Abram Deuel,

Vernon E. Arnold,
Melvin Elkenburgh,
Austin A. Yates,
James Doughty, jr.,
Willard S. Near,
Henry A. Near,
F. J. Riley,
Benj. C. Riley,
W. V. Riley,
Robert E. Morey,
Horace Phillips,
Jas. M. Holsapple,
Geo. Abel,
James H. Barrett,
H. J. Newman,
Geo. E. Rogers.

ALBANY, October 6, 1898

HON. FRANK S. BLACK, *Governor of the State of New York, Albany, N. Y.:*

Dear Sir—I have the honor, in the absence of the secretary, to acknowledge the receipt of your communication of the 5th inst. enclosing communications regarding certain alleged nuisances, as follows: Petition from citizens of Saratoga, referring to the alleged pollution of the waters of Saratoga lake; complaint of Mr. John Hayden concerning an alleged nuisance at Port Byron, N. Y., caused by sewage from the city of Auburn being discharged into Owasco creek.

In reply you are informed that both subjects will receive the prompt consideration of this board.

Very respectfully,

T. A. STUART,
Assistant secretary

ALBANY, November 28, 1898 .

PROF. OLIN H. LANDRETH, *Consulting Engineer, State Board of Health, Schenectady, N. Y.:*

Dear Sir—In compliance with a resolution adopted at a meeting of this board, held November 16, 1898, you are directed to visit Saratoga Springs for the purpose of investigating a complaint made concerning the alleged pollution of the waters of Saratoga lake, as shown by the enclosed petition to the Governor.

In compliance with a request made by Mr. T. F. Hamilton of Saratoga Springs, it is recommended that you arrange to visit Saratoga on December 8th next for the purpose of making the desired investigation.

In submitting your report to this board, please return the enclosed papers.

Your services and expenses in connection with the investigation are to be paid by the municipality of Saratoga Springs.

Very respectfully,

BAXTER T. SMELZER,
Secretary

SCHENECTADY, N. Y., *December 15, 1898*

Dr. BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—Agreeable to verbal understanding with you at the December meeting of the State Board of Health yesterday, I beg to enclose herewith my written report on the Saratoga lake pollution matter, referred by you to me on November 28th. This written report being in substance the same as my verbal report at the meeting, may be substituted therefor if you think proper. I also beg to enclose all the papers in the case which were referred to me, including one pinned to the complaint, which concerns another matter, but which came so attached to the complaint.

I shall be glad to be informed as soon as practicable, concerning future action decided on.

I am, dear sir,

Very truly yours,

OLIN H. LANDRETH,

Consulting engineer

SCHENECTADY, N. Y., *December 14, 1898*

Dr. BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—In the matter of the complaints as to the unsanitary condition of Saratoga lake, which you referred to me with instructions to investigate the same by communication of November 28th. I beg to submit the following report on the same:

On the 8th inst. I met Mr. T. F. Hamilton by appointment and with him went to Saratoga lake, visiting the westerly and northerly shores of the same as well as the valley of the Kayaderosseras creek up to the point where the Saratoga Springs outlet sewer enters it; also the territory between the village of Saratoga Springs and the lake and creek, as well as the point on the outlet sewer where the storm-water overflow is allowed to escape from the sewer into Village creek, which empties into Lonely lake, a tributary of Saratoga lake through Kayaderosseras creek. I also met and made inquiries of numerous citizens in the localities covered by the cursory examination, as well as the village engineer, Mr.

Mott. I did not visit any portion of the Kayaderosseras creek above the sewer outfall, but collected information from numerous parties conversant with the upper portions of the creek.

My instructions to investigate the complaints referred to me, which complaints attempt to specify the causes of the unsanitary conditions, naturally call for two quite distinct determinations: 1, An examination as to the reality or actual existence of any ground for complaint, and 2, an investigation as to the cause of the unsanitary conditions, in order to intelligently reach the question of remedy.

Concerning the first of those two determinations, I am fully prepared to report that although at the present season of the year the conditions complained of are at least evident, still from all evidence collected I am convinced that there is ample ground for complaint and that a grievance actually exists similar in character to that complained of in the paper sent me. Ordinarily my report would also cover the second portion of the investigation, but in this case, it appears to me very evident from the facts ascertained by me, that a very considerable portion of the evidence which will have to be secured in order fully to locate the cause or causes of the conditions complained of, will have to be looked for from persons who may not be willing voluntarily to give all the information needed. To begin such an investigation and find it limited in extent by the willingness or unwillingness of important witnesses would either result in an incomplete and useless undertaking, or would delay the proper investigation. I am, therefore, of the opinion that no proper investigation of the causes of the conditions complained of, nor in fact of the true extent of the conditions without waiting for a recurrence of the summer months, can be made without a judicial investigation or inquiry made with due authority to call for persons and papers. From the evidence secured I am of the opinion that a public nuisance exists and that the rights of the public are seriously impaired; these rights in this particular case are represented by numerous individuals whose interests are extensive; and these interests are not only being injured by the public nuisance in proportion to the severity of the conditions and the duration of their existence, but are actually in danger of destruction or serious permanent impairment, from the nature of

these interests which principally depend on the maintenance of sanitary and agreeable conditions in the streams and lake concerned and to which the complainants and others stand in the position of riparian owners. The public, as represented by these complainants and others, is clearly entitled to a reasonable degree of promptness in the abatement of the conditions found to exist. Under these circumstances I do not think it desirable nor necessary to wait for a return of warm weather before making the investigation into the causes of the detrimental conditions.

I, therefore, respectfully request that you instruct me whether to continue the investigation to cover the causes of the conditions complained of, as I may be able to perform it; to wait for a judicial investigation by the State Board of Health, or a committee thereof, having power to subpoena witnesses and thereby make the investigation an exhaustive one, as the conditions and circumstances attending the results will probably require that it should be. Such an investigation while being judicial will necessarily be largely technical and hence if entered upon, it should be carefully worked up in advance.

I beg to recommend strongly the latter option.

I am, dear sir,

Very truly yours,

OLIN H. LANDRETH,
Consulting engineer

ALBANY, *December 22, 1898*

HON. FRANK S. BLACK, *Governor of the State of New York, Albany, N. Y.:*

Dear Sir—I have the honor to transmit herewith, a copy of the report made by Prof. Olin H. Landreth, upon his investigation as to the alleged pollution of the waters of Saratoga lake, complaint of which was referred by you to this board October 6, 1898.

Very respectfully,

BAXTER T. SMELZER,
Secretary

Special Investigations and Reports

GLEN COVE

GLEN COVE, L. I., *May 17, 1898*

Dr. BAXTER T. SMELZER, *Secretary New York State Board of Health,*
Albany N. Y.:

Dear Sir—Agreeable to the request contained in your letter to us of September 7, 1897, to keep you informed regarding the sanitary improvements to be made at our works at Glen Cove, we would respectfully submit the following:—

The cypress tank, spoken of by Prof. Bradley, has been completed, and is now in operation; we have had it in use for about six weeks; in our opinion it is doing all that we expected of it.

The filling in, which we told Prof. Bradley would be done, has also been completed; these are the improvements contemplated at the time of his visit here, but we are now supplementing this work by building a conduit outside of the gates to a point near the end of the dock, where the waste waters will be discharged into a more rapid current; this work we expect to complete in about a week or ten days. We are quite confident that the improvements made will remove any cause of complaint in future, but it would be a satisfaction to us if your board should see fit to send an inspector here to see what work has been done.

Very respectfully yours,

P. H. GRIMM,

Supt. National Starch Mfg. Co.

ALBANY, *May 18, 1898*

P. H. GRIMM, *Supt. National Starch Mfg. Co., Glen Cove, L. I.:*

Dear Sir—Your letter of the 17th instant, reporting that the sanitary improvements in connection with your works at Glen Cove which this department ordered made have been completed, and stating that you would like to have this Board send an inspector to see what work has been done, has been received.

In reply, you are informed that an inspector will be sent some time in the near future to look over the work.

Very respectfully,

BAXTER T. SMELZER,

Secretary.

ALBANY, June 9, 1898

P. H. GRIMM, *Supt. National Starch Mfg. Co., Glen Cove, L. I.:*

Dear Sir—Prof. Theo. J. Bradley having been designated by this Board in August, 1897, to visit Glen Cove for the purpose of investigating certain alleged nuisances in connection with the manufacture of the different products of the National Starch Manufacturing Company, located at Glen Cove, submitted to this Board August 16, 1897, a report upon the investigation made by him.

Prof. Bradley, in referring to work done by your company with the view to abating the nuisance found to exist, states as follows:

“ Since the last investigation there they have arranged to conduct the effluent into a large receiving basin, separated by embankments from the creek upon the north and the inlet upon the south-side of the works. This basin is provided with a gate at its lower end, which is only opened when the tide is on the ebb. By this arrangement the effluent is not discharged continuously, but is carried by the outgoing tide far into Hempstead harbor. As the gate is below the company's dam, this prevents the backing up of the effluent into the creek and pond and there fermenting and precipitating the slimy matter which was noticed in former investigations.

Evidently the means adopted to finally discharge the effluent are successful, but the catch-basin is not completely emptied with the outgoing tide, and that portion remaining and the sediment which collects there undergoes a rapid fermentation, one of the products of which is hydrogen sulphide. This mixed with other gaseous products is the cause of the trouble.”

Prof. Bradley also states that:

“The superintendent is aware of the fact that the trouble is caused by this catch-basin, and has already taken steps to further abate the nuisance by filling in the basin, and constructing a large cypress tank, with a capacity of 500,000 gallons, the total amount of the effluent in 24 hours. The bottom of this tank is to be two feet above low tide and the effluent will be conducted into it and discharged completely, in the manner I have described above, during ebb tide, twice daily. Thus none of the effluent will be retained for more than 12 hours, being discharged before it has a chance to ferment, and the sediment will be removed before refilling.”

Having received notice from you under date of May 17, 1898, that the proposed improvements to your works, as indicated in Prof. Bradley's report, had been completed, I take pleasure in stating that from my examination upon a recent visit to Glen Cove of the work done by the National Starch Manufacturing Company looking to the sanitary improvement of their plant, I am inclined to the belief that the work performed will permanently abate the nuisances of which complaints had been made to this Board.

Very respectfully,

BAXTER T. SMELZER,

Secretary

CORINTH HIGH SCHOOL

SCHENECTADY, N. Y., *December 27, 1897*

Prof. A. M. HOLLISTER, *Principal Corinth High School, Corinth, N. Y.:*

Dear Sir.—I beg to submit the following report of my examination of the heating and ventilation systems of your school building recently made by me. The heating system was not in operation at the time of the examination, but complete measurements were made of all essential dimensions of the two systems

as well as determinations of the size of the respective rooms, their seating capacity, wall exposure, window surface, and position of inlets and outlets for the air by which the building is both heated and ventilated.

For the purpose of identifying the several rooms, I have given them the following numbers respectively:

First floor: Northwest room is called, No. 1; northeast room is called, No. 2; southeast room is called, No. 3; southwest room is called, No. 4.

Second floor: Northwest room is called, No. 5; northeast room is called, No. 6; southeast room is called, No. 7; southwest room is called, No. 8.

For the purpose of comparing the present systems with what is considered requisite in good practice, I have adopted the following standards, all of which may be shown to be reasonable and requisite:

Amount of fresh air requisite for proper ventilation cubic feet per capita per minute	30
Winter temperature to be maintained with external air 0 degree	70
Maximum variation in different parts of room at same time..	3
Maximum velocity of entering air (through registers), feet per second	4

Heat loss through exterior walls per square feet per hour per degree (difference in temperature, 0 to 70).....0.32 heat units.

Heat loss as above through double sash windows..0.52 heat units.

For the north walls and windows the above constants should be increased to 0.35 and 0.57 respectively:

To comply with these standard conditions, the following amounts of air and quantities of heat in the several rooms is needed:

First floor.	Room No. 1	2	3	4
Cubic feet air per minute....	1650	1620	1620	1800
Heat units per hour.....	137300	133800	130300	142500
Second floor.	Room No. 5	6	7	8
Cubic feet air per minute....	1800	1260	1620	1470
Heat units per hour.....	150800	108400	132400	119700

The above amounts of air are required at all times while school is in session, but the amounts of heat specified are required in full only during zero weather, the amounts needed being less as the temperature is higher. An examination of the heating and ventilating plants with reference to their capacities to furnish the above amounts of air and heat leads me to the following conclusions: 1 The furnaces proper are capable of producing the above amounts of heat with a permissible though undesirable amount of crowding of the combustion during the coldest weather. 2 The air heating surfaces of the furnaces are entirely inadequate to permit the heat to be fully abstracted from the furnaces by the entering air, with the result that during cold weather the furnace gases must pass to the chimney with much more than the legitimate and necessary heat remaining in them, thus not only interfering with the proper economy in coal, but also necessitating the further crowding of the furnaces in the endeavor to make good the loss of heat thus felt in the rooms. 3 The ventilating furnace in the air-shaft appears to have the capacity to heat the air from the rooms to the necessary temperature to induce the velocity demanded to move the proper quantity of air through the rooms if provided with the proper sizes of air passages to and from the rooms; the setting of this furnace directly in the base of the shaft, without a compensating increase in the area of the shaft, to some extent reduces the capacity of the shaft to draw the necessary quantity of air, but this defect is not at present important as other defects are, the determining points in the present capacity of the entire plant. 4 The sizes of the registers for air entering and leaving the school rooms are entirely too small to meet the requisite conditions, and the relative location of the inlet and outlet registers is defective. The placing of the air inlets high up toward the ceiling and the outlets in the floor is proper, but the outlets should not be placed so nearly under the inlets as is the case. These two defects of contracted size and improper relative location operate as follows to impair the heating of the rooms: The only motive power which causes the air to circulate through the heating furnaces, the air flues,

the school rooms and the exhaust flues and the stack is the motor column of heated air in the exhaust stack; the bouyancy of this column of heated air causes it to rise and to draw the air from the school rooms, which in turn are supplied from the furnace chambers and these in turn from the cold air inlets; the motive influence is therefore one of suction and not of pressure as in the case of a forced circulation induced by fan blowers. In using the suction or vacuum system such as you have, the air inlets into the room should be so amply large that the air will have full opportunity to enter freely at the ceiling or near it and to spread out under the ceiling, falling only when it becomes cooler, which it does near the windows and outside walls whence it flows to the outlet registers; any restriction of the freedom of entry causes the outlet registers to draw the air out of the room faster than it can enter and to cause a short-circuit to be formed from the inlet register directly to the outlet register, and the more nearly these are placed under one another the more readily can this be accomplished. In the present case both the inlet and the outlet registers are small for their service and thereby induce a high velocity through them and a high resistance. If these resistances were only on the outlet registers the defect would simply reduce the amount of air flowing without interfering with the circulation of the air that did enter, being on both the outlet as well as the inlet, the effect is both to reduce the amount flowing through the room, and to cause that which does enter to pass more directly to the outlet registers, leaving the more remote portions of the room out of the circuit and hence with no provision either to warm them or to remove the impure air.

The defects complained of by you were, if I remember correctly, 1 That the remote portions of the north rooms, and particularly the northwest rooms (Nos. 1, 2, 5 and 6, and particularly Nos. 1 and 5), could not be kept warm in cold weather; 2 That your room situated between No. 5 and No. 6 could not be warmed in cold weather; 3 That imperfect ventilation of the school rooms caused trouble during the months of May, June, September and October of each year; 4 That defective ventila-

tion of the dry-closets had been occasionally observed, generally at times when the weather had changed suddenly from cool to warm.

Of these four complaints, the first is fully accounted for by the deficient amount of heating surface in the furnaces, permitting the air to pass through the furnace chambers without taking up the full amount of heat, coupled with the reduced amount of air flowing through the rooms and the "short-circuiting" or defective circulation in the rooms due to the deficiency in the sizes of registers; complaint two is evidently due to the manner in which the branch airflue supplying the room with air, is connected with the main flue; instead of having its own independent air-flue, or even of leaving the main flue at an acute angle, it leaves the latter at a right angle; complaint three is accounted for by the deficient amount of air drawn through the rooms, which defect, due at all times to the restriction and "short-circuiting" caused by the registers, is worse when the motive power of the circulation—the buoyancy of the air in the shaft—is weakened by the external temperature being high and no heat is being received from the heating furnaces, which is the case during the warm months of the school year. This latter cause also is accountable for complaint fourth, whenever occasion comes when the temperature of the air in the dry-closet airshaft after being warmed by the smoke from the ventilating furnace in the large airshaft, is still cooler than the outer air, the circulation will be *down* instead of up the closet shaft and out through the closets, and may even pass upward through the basement stairways to the halls above, reversing the ordinary and proper direction of flow. I present here a table showing the sizes which the air inlet registers should have to furnish the stated 30 cubic feet of air per capita, per minute, with a velocity of 4.1 linear feet per second, which is as great as should be permitted, together with a similar table of the actual sizes as they exist; the areas are the net areas of the actual openings through the register gratings.

First floor.	Room No. 1	2	3	4
Required area, square feet.....	7.0	6.7	6.7	7.5
Present area, square feet.....	2.6	2.0	2.0	2.0
Second floor.	Room No. 5	6	7	8
Required areas, square feet.....	7.5	5.2	6.7	6.1
Present area, square feet.....	2.0	2.0	1.7	1.7

The remedies for the defective heating and defective ventilation in the school-room are two-fold: first the increase in the heating surface of the furnaces, without necessarily changing the combustion parts of the furnaces, since the grate areas are probably sufficient with moderate crowding in coldest weather; second, an enlargement of the air flues and registers leading air into the school rooms.

The minimum amount of increase in these two items consistent with a satisfactory working of the systems it is impossible to state without an examination of the system when in operation, by measurement of the air volumes and temperatures produced by the present system, and temperature observations of the chimney gases. As the complete rectification of the defects of the system will necessitate important changes which could only be done during the summer vacation. I beg to recommend that for the present winter the following changes only be made now, and the more thorough ones be carried out next summer, after a more thorough examination of the present system while in operation.

The changes recommended for the present are: 1 The replacing of the broken or cracked portions of the furnaces by new ones, having greater extent of heating surface, with provisions made now for adding still further to the heating surface next summer when more time is available; 2 The removal of the registers on all inlets into school rooms, in order to thereby increase the effective areas of air-inlets; 3 The placing of a deflecting plate in the main airduct at the junction of the branch flue to your room, so as to deflect a portion of the main air current into your branch flue, and the removal of your inlet register; 4 The carrying of a stronger fire in the ventilating furnace in the main airshaft when warm weather arrives, *provided* it is found that

the removal of the registers in school rooms has not improved the defective ventilations as much as is desired.

I have no reason to believe that the changes recommended to be made now will furnish a *full* remedy for the defective heating, though it may do so for the defective ventilation of school rooms.

The occasional reversal of flow in the dry-closet ventilating system is one of the contingencies incident to the system, which can only be prevented by stronger fire in the ventilating furnace when the atmospheric conditions are such as to render the reversal possible.

Very truly yours,

OLIN H. LANDRETH,

Consulting engineer State Board of Health

CITY OF NIAGARA FALLS

NIAGARA FALLS, N. Y., *July 25, 1898*

BAXTER T. SMELZER, M. D., *Secretary State Board of Health,*
Albany, N. Y.:

Dear Sir—I herewith enclose you certified copies of the official minutes of the Board of Health for July 14 and 21, 1898. On page 244 of the official minutes of July 14th, you will notice a report of an investigation conducted by me relative to an endemic of typhoid fever existing in the locality mentioned in that report. Further on in this report, you will notice that I was directed by the Board to have the water in the wells of Jacob Bingenheimer, Louis Elsheimer and Marcus Brown analyzed. This was done and on July 21st, I submitted a report of the findings of Dr. William G. Bissell, city bacteriologist of Buffalo. In face of the fact that these wells show a number of cultures of bacteria per cubic centimeter which is far in excess of that found in potable water, ranging in number from 3020 to 5050, also that bacteria colli communis was found present in all three of the wells, the board of health of the city of Niagara Falls voted to dismiss the com-

plaint against said wells, thereby endangering the lives of all the people living in the vicinity of these wells and securing their water supply from them.

I will add further in regard to the condition of these wells, than is specified in either my report or in Dr. Bissell's analysis, that the well known as Brown's well, and so described in Dr. Bissell's report, is a drilled well, 50 feet deep, in rock which is full of crevices. This well is located only 27 feet, actual measurement, from the curb of the well to the edge of a vault over which are located six closets. This vault is six or eight feet deep and is probably one-quarter full of excrement. This well you will notice by the report had 5050 cultures of bacteria per cubic centimeter.

I also asked Dr. Bissell his opinion relative to the potability of the well water in question and the city hydrant water in the same part of the city, he having already analyzed a specimen of the city water. His report on that question you will notice in the official minutes.

Typhoid fever in the city of Niagara Falls is endemic in some particular part of the city almost constantly. Our water supply here is taken from the river and numerous wells about the city. It does not seem possible that in a city of this size, and indeed the analysis submitted would bear out the statement, that well water can be potable; and it seems to be in this particular instance that a very grave mistake has been made in allowing these wells to be left open.

I therefore request you as secretary of the State Board of Health to look into this matter and take such action as you may see fit. It would seem to me that a Board of Health that, in the face of such a report as was submitted to them by a man of the ability of Dr. W. G. Bissell, would vote directly in opposition to such a report and upon such a subject is certainly derelict in its duty. Trusting that this matter may have your attention, I remain,

Very respectfully your obedient servant,

WALTER A. SCOTT,

Health officer city of Niagara Falls

STATE OF NEW YORK,
COUNTY OF NIAGARA, CITY OF NIAGARA FALLS, } ss.:

I, S. F. Arkush, city clerk of the city of Niagara Falls, do hereby certify that I have compared the preceding with the original minutes of the board of health of this city of their meetings of July 14 and July 21, 1898, and that the same are true and correct transcripts therefrom, and of the whole of such original.

In testimony whereof, I have hereunto set my hand and
[SEAL.] affixed the seal of my office this 25th day of July, 1898.

S. F. ARKUSH,
City clerk city of Niagara Falls

BOARD OF HEALTH,
NIAGARA FALLS, N. Y., *July 14, 1898*

REGULAR MEETING—OFFICIAL RECORD

Meeting called to order by Mayor Hastings at 8.15 o'clock
p. m.

Present—Messrs. Collins, Eames, Reiss, Reickhoff and Sullivan.

Absent—Dr. McCarty.

The health officer, plumbing and sanitary inspectors were also present.

Upon motion of Mr. Collins, the minutes of the last meeting were approved as officially printed in the Journal of Proceedings.

From the health officer:

NIAGARA FALLS, N. Y., *July 14, 1898*

To the Honorable Board of Health, Niagara Falls, N. Y.:

Gentlemen—Pursuant to your resolution of July 7, 1898, I have summoned the following named persons to appear before this meeting and answer to complaint made against their properties: Marcus Brown, Charles Trusdale, Fred Trusdale, John Spillane, V. M. Porter, Adolph Rose, Franklin Pletcher, Alice Laffin, Eliza Brown, James Hewett, Michael Spillane, Frank Giroux, Jeremiah Callahan, Jacob Schneider, I. J. F. King, George King, A. J. Porter, John McDonald, James Norman, Mrs. A. C. Johns, Mrs. Laura Isaacs, Wm. Pool.

I have to report that of those summoned the following have had the nuisance abated that existed on their property: Michael Maloney, I. J. F. King, Jeremiah Callahan, Charles and Fred Trusdale, V. M. Porter, Jacob Schneider, James Norman, A. J. Porter, James Hewett.

Respectfully,

W. A. SCOTT,

Health officer

Marcus Brown, Charles and Fred Trusdale, Adolf Rose, D. Isaacs, Frank Giroux, George King and A. C. Johns appeared before the board in answer to summons.

Upon motion of Mr. Collins, the sanitary inspector was directed to notify George King to abate nuisances on his property within five days.

Upon motion, the health officer was directed to notify Mrs. Laura Isaacs to abate nuisances on her property within 10 days; Mrs. Eliza Brown to abandon outside vault and make proper sewer and water connections to premises on Main street within five days; Mr. Franklin Pletcher to abate nuisance on his premises within five days; Mrs. Alice Lafflin to abate nuisances existing on her property within five days; John McDonald to abate nuisances existing on his premises within five days, and William Pool to repair plumbing on property on Falls street within five days, and if the same is not done within the time so specified the health officer to order the work done and charge the cost thereof against the property.

Upon motion of Mr. Reickhoff, the health officer was authorized and directed to have the well on the premises of Marcus Brown analyzed.

Upon motion of Mr. Collins, action on the complaints against John and Michael Spillane was deferred until next meeting.

Upon motion of Mr. Collins, the health officer was directed to notify Frank Giroux to procure a covered wagon for the delivery of milk in this city within 10 days.

Upon motion of Mr. Eames, the health officer was directed to confer with the city attorney and determine the proper course

to be pursued in the tearing down of the "Scalzo" building, on the property of H. V. Rose, on Buffalo avenue.

From the health officer:

NIAGARA FALLS, N. Y., July 13, 1898

To the Honorable Board of Health, Niagara Falls, N. Y.:

Gentlemen—Complaint was made to me on July 11, 1898, that an epidemic of typhoid fever existed in this city in the region bounded by South avenue, alley running between South avenue and Cleveland avenue, between Main and Tenth, Cleveland avenue and Main street.

I was requested to investigate and find out if possible the conditions which might possibly lead up to the existence of so much typhoid in this locality. Upon investigation I found existing in this district before described 12 cases and the following unsanitary conditions:

On the property of Mrs. Bridget Downes, in the alley leading between Cleveland avenue and Tenth street, I found a closet in very bad condition. I also found five closets belonging to one George Hathway, on property situated the whole length of the alley on the side opposite from Mrs. Downes, which were in bad condition. Nearly all of the houses are discharging sink drainage on the surface of the ground. On the property of Louis Elsheimer, on Main street, are two closets in a very unsanitary condition.

I also found that these 12 cases had been obtaining their water supply from wells belonging to Jacob Bingenheimer, on Cleveland avenue, and Mr. Elsheimer, on Main street. An examination of Mr. Bingenheimer's well showed it to be a dug well, 16 feet deep, 15 feet from a horse stable and a large pile of manure. Examination of Mr. Elsheimer's well showed it to be a dug well, 24 feet deep, 50 feet from four water closets. I consider both of these wells unsanitary and unfit for use, and would recommend that your honorable body take such action as may be necessary to cause them to be closed. The district in which they are located, aside from its unsanitary surround

ings, is very thickly populated, and any surface water finding its way into the well could not help but be contaminated.

I would also recommend that your honorable body take such steps as will cause the parties complained of in this report as having unsanitary closets and other conditions upon their premises to immediately clean them up, and would recommend that water be put through the alley between Main street and South avenue, and that these parties be made to connect with the sewer.

I also transmit to the board formal complaints against each one of these parties as before described, and am ready to furnish investigating blanks to the same as soon as directed by resolution from this board.

Respectfully submitted,

WALTER A. SCOTT,

Health officer

Complaints in regular form were received against the premises of Jacob Bingenheimer, Louis Elsheimer, Mrs. Bridget Downes, George Hathway and the city of Niagara Falls.

By Mr. Collins:

Resolved, That the health officer be directed to investigate into the complaints against Jacob Bingenheimer, Louis Elsheimer, George Hathway and Mrs. Bridget Downes in relation to violations of the provisions of the sanitary code and of the rules and regulations of the board of health contained in the complaint of W. A. Scott, M. D., filed with the board of health.

Adopted.

Upon motion of Mr. Eames, the complaint against the city of Niagara Falls was referred to the board of education.

The health officer reported that the complaints against Jacob Bingenheimer, Louis Elsheimer, George Hathway and Mrs. Bridget Downes, referred to him, had been investigated by him and that he found the nuisances complained of did exist on their premises.

Upon motion of Mr. Eames, the health officer was authorized

and directed to have the wells on the property of Jacob Bingenheimer and Louis Elsheimer analyzed.

The sanitary inspector, to whom was referred at the last meeting for investigation complaints against the premises of Daniel Jones, Mrs. Pierce, I. J. F. King, as agent, Mrs. Susan Reilly, M. Rommell, M. Oppenheim and Dr. J. Gray, reported that he had investigated the same and found the nuisances complained of did exist on their premises.

By Mr. Collins:

Resolved, That notice be given to Daniel Jones, Mrs. Pierce, I. J. F. King, as agent; Mrs. Susan Reilly, M. Rommell, M. Oppenheim, Dr. J. Gray, George Hathway and Mrs. Bridget Downes that a hearing on the complaints against them, filed with this board, will be held before the board of health at a meeting thereof to be held on the 28th day of July, 1898, at 8 o'clock p. m., at the board of health rooms in the city of Niagara Falls, N. Y., and that a copy of the report of the health officer filed with this board be served on them, together with a notice of such hearing.

Adopted.

The board approved of the accounts of the Niagara Falls printing house, Edwin Walker, William Hope, Niagara pharmacy and Miss Eleanor Cooley.

Upon motion of Mr. Sullivan, the board adjourned until Thursday evening, July 28, 1898, at 8 o'clock p. m.

S. F. ARKUSH,

Clerk

BOARD OF HEALTH,

NIAGARA FALLS, N. Y., *July 21, 1898*

SPECIAL MEETING—OFFICIAL RECORD

Meeting called to order by Mayor Hastings at 7.50 o'clock p. m. for consideration and action upon the report of the analyses of the wells of Marcus Brown, Louis Elsheimer and Jacob Bingenheimer, as taken by Dr. William G. Bissell, bacteriologist of the health department of Buffalo, N. Y.

Present—Messrs. Collins, McCarty, Reickhoff and Sullivan.

Absent—Messrs. Eames and Reiss.

The health officer, plumbing and sanitary inspectors were also present.

BUFFALO, N. Y., *July 20, 1898*

Dr. WALTER SCOTT, *Health officer, Niagara Falls, N. Y.:*

Dear Sir—I report result of examinations of samples of well water collected by myself personally July 16, 1898, as follows:

Sample No. 1—Brown's well on Michigan street:

Average number of bacteria per cubic centimeter, 5050. *Bacillus coli communis* found. This is said to be a drilled well. The water in the well at the time of collection of sample was low. There is absolutely no doubt of fecal material gaining entrance to this supply. The water is absolutely unfit for household use.

Sample No. 2—Bingenheimer's well:

This is said to be a dug well, stoned up. Average number of bacteria to the cubic centimeter, 3020. Putrefactive organisms present. *Bacillus coli communis* found. Faecal material gains entrance to the supply of this well. The water is not fit for household use.

Sample No. 3.—Elsheimer's well:

Said to be a dug well, stoned up. Average number of bacteria to the cubic centimeter, 3,670. Putrefactive organisms present. *Bacillus coli communis* found. Fecal material gains entrance to the supply of this well. The water is not fit for household use.

The number of micro-organisms in each of the samples examined is far above that found in potable well waters.

The finding of the *bacillus coli communis* is positive evidence of the presence of excrement, either animal or human, and the drinking of water containing this material is dangerous in the extreme.

The presence of putrefactive organisms in a supply is not infrequently the cause of epidemics of diarrhea, and particularly among infants during the warmer months.

Respectfully,

WILLIAM G. BISSELL

The health officer submitted the following additional communications from Dr. Bissell:

BUFFALO, N. Y., *July 19, 1898.*

Dr. WALTER SCOTT, *Health officer, Niagara Falls, N. Y.:*

Dear Sir—In regard to your inquiry regarding the desirability of the water from certain wells, known as Brown, Bingenheimer and Elsheimer, as compared to the public unfiltered supply, a sample of which I have examined, coming from the kitchen tap at De Veaux college, I would state that the public supply, as indicated by my examination July 9, 1898, at which time this supply contained on the average 1278 colonies of bacteria to the cubic centimeter and the colon bacillus was not found, is to be preferred.

The water in the wells examined is absolutely unfit for household use, and whereas there is no doubt but that the public supply is not free from contamination it is better than the water in the wells mentioned.

Respectfully,

WILLIAM G. BISSELL

BUFFALO, N. Y., *July 9, 1898*

Dear Dr. Scott—As I had the sample of city water I examined same. Have not examined any of the other samples. The water I examined came from the kitchen tap.

There are 1278 colonies of bacteria to the cubic centimeter in comparison to 300 in Buffalo supply for the same date. I did not find the bacillus coli communis in the sample.

Respectfully,

WILLIAM G. BISSELL

Messrs. Bingenheimer and Elsheimer appeared and stated that they were not satisfied with the analysis as submitted.

Dr. W. R. Campbell, who was also present, stated that in view of the reputation of Dr. Bissell as a bacteriologist, it would be unwise to question his opinion on this subject.

His honor the mayor then withdrew from the meeting and called Dr. McCarty to the chair.

Messrs. Eames and Reiss appeared at this time.

Mr. Eames moved that the report, as submitted by Dr. Bissell, be disapproved by this board.

Motion of Mr. Eames was not seconded.

Mr. Eames moved that the complaints against Marcus Brown, Jacob Bingenheimer and Louis Elsheimer be dismissed and that no further action be taken upon the same.

Mr. Collins called for an aye and nay vote upon the motion to dismiss complaints, which was granted.

Vote on motion of Mr. Eames to dismiss complaints as hereinbefore mentioned:

Ayes—Messrs. Eames, Reiss, Reickhoff and Sullivan—4.

Nays—Messrs. Collins and McCarty—2.

Motion of Mr. Eames carried.

Mr. Collins moved that the report and letters of Dr. Bissell be received, placed on file and printed in and as part of these proceedings.

Carried.

Upon motion of Mr. Collins the board adjourned.

S. F. ARKUSH,

Clerk

ALBANY, *July 26, 1898*

HON. ARTHUR C. HASTINGS, *President Board of Health, Niagara Falls, N. Y.:*

Dear Sir—This board is in receipt of certified copies of the official minutes of meetings of the board of health of your city, held July 14 and 21, 1898, in which it is found that notwithstanding the fact as shown by the report of your health officer, that nuisances detrimental to health existed on the premises of Jacob Bingenheimer, Louis Elsheimer, and Marcus Brown, the findings of the health officer being verified by the reports of Dr. William G. Bissell upon his bacteriological examinations of samples of water taken from the wells of the parties above named, the local board of health has dismissed the complaint in each case.

As the records of this board for some years past show that the city of Niagara Falls has had an abnormal number of cases of typhoid fever, of which fact the local board of health is no doubt aware, it would seem to be the duty of your board to cause such unsanitary conditions as exist on the premises of the parties above mentioned to be promptly remedied, instead of as has been done by them, dismissing the complaints.

It is therefore recommended that you, as mayor of the city, and the official head of the board of health, cause the use for domestic purposes of the water on premises of Jacob Bingenheimer, Louis Elsheimer and Marcus Brown to be abandoned.

Very respectfully,

BAXTER T. SMELZER

Secretary

CITY OF NIAGARA FALLS, N. Y., August 22, 1898

BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—You have had some correspondence with Dr. Scott, the health physician here, and you also addressed to me a letter, July 26th, as president of the board of health, which, came during my absence from the city, in reference to several wells in the city which have been declared to be unsanitary by Dr. Bissell, of Buffalo. This letter having arrived during my absence from the city, no action has been taken on it and the city attorney informs me that should any member of the board, individually, trespass on these men's property for the sake of closing the wells they would become personally liable and with this advice on the subject it would seem that none of the board would care to interfere with the closing of the wells. Now, what would you advise? Cannot the State Board take the matter in hand? I would be perfectly willing to have the wells closed if I had the personal power to close them.

Yours respectfully,

A. C. HASTINGS,

Mayor

ALBANY, *September 2, 1898*HON. A. C. HASTINGS, *Mayor, City of Niagara Falls, N. Y.:*

Dear Sir—I am in receipt of your communication of the 22d ultimo in the matter of closing up certain wells in your city, the waters of which have been declared by bacteriological examination to be polluted and unfit for domestic use.

The action of the board of health of your city in failing to condemn the wells in question, upon the report made by the health officer, also the report of the bacteriologist, would seem to indicate that the members are not inclined to comply with the provisions of the Public health law, section 25 which requires that a local board of health *shall* order the suppression and removal of all nuisances and conditions detrimental to life and health found to exist within the municipality, while article 2, section 26, provides as follows:

“Removal of nuisances—If the owner or occupant of any premises fails to comply with any order or regulation of any such local board for the suppression and removal of any nuisance or other matter in the judgment of the board detrimental to the public health, made, served or posted as required in this article, *such boards or their servants or employes may enter upon the premises to which such order or regulation relates, and suppress or remove such nuisance or other matter.*” * * *

In order that this Board may make an examination of the water from the wells of Marcus Brown, Jacob Bingenheimer and Louis Elsheimer, it is requested that Dr. Scott be directed to send a sample of water from each well in accordance with the enclosed instructions, notifying this department when the water is shipped, in order that the chemist of the Board may be instructed to proceed with the examination.

Very respectfully,

BAXTER T. SMELZER,

Secretary.

ALBANY, *September 7, 1898***BAXTER T. SMELZER**, *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—Replying to your favor of the 3d inst., Dr. Scott, health officer here, has secured three samples of water and forwarded them to you by express. The samples were taken in company with an officer, measurements taken by him and the water was sealed up in his presence, also the presence of a third party, and he has written your department fully in regard to it.

Yours respectfully,

A. C. HASTINGS,

*Mayor*ALBANY, *September 9, 1898***HON. A. C. HASTINGS**, *Mayor, Niagara Falls, N. Y.:*

Dear Sir—I am in receipt of your communication of the 7th inst., stating that Dr. Scott has sent three samples of water to Prof. Tucker, in compliance with recommendation made to you under date of September 3, 1898.

In reply you are informed that Prof. Tucker has been instructed to proceed with the examination of the samples, and when completed to report the result to this Board.

Upon receipt of Prof. Tucker's report, a copy will be sent to you.

Very respectfully,

BAXTER T. SMELZER,*Secretary*ALBANY, *September 9, 1898***DR. W. G. TUCKER**, *Director of the State Board of Health Laboratory, Albany, N. Y.:*

Dear Sir—I am in receipt of a communication from Hon. A. C. Hastings, mayor of the city of Niagara Falls, stating that Dr. Scott, the health officer of that city, has sent to you, in compliance with orders from this office, three samples of water for analyses.

Upon receipt of the samples you are requested to examine them and report the result to this Board.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, *September 19, 1898*

Dr. B. T. SMELZER, *Secretary State Board of Health of New York, Albany:*

Dear Sir—I respectfully enclose herewith reports upon the analyses of three samples of water received from Dr. W. A. Scott, health officer, Niagara Falls, by your order on the 8th inst. These waters present the general characteristics of well-waters in similar localities to those described by Dr. Scott in his letter accompanying the samples. They are not offensive to the senses on account of the filtration they receive from the soil, but they show evidence of objectionable pollution and must be rated as suspicious. Under all the circumstances I should certainly advise that these wells, and similarly situated ones in this locality, be closed if other and better water is obtainable.

Very respectfully,

WILLIS G. TUCKER,

Director

No. 454

STATE BOARD OF HEALTH OF NEW YORK

Analysis of potable water. (Results are parts in 100,000.)

Received from Dr. W. A. Scott, health officer, Niagara Falls, N. Y. Date received, September 8, 1898; Source, well of Jacob Bingenheimer; how labelled, "No. 1;" color and appearance, transparent, very light yellowish tint, very slight sediment; odor at 100 F., none; chlorine in chlorides, 5.20; free ammonia, 0.0055; albuminoid ammonia, 0.0038; nitrites, present; total solids, 86.40; loss on ignition, 21.80; behavior during ignition, no change; mineral matter, 64.60; remarks, not satisfactory.

S. B. of H. Laboratory, Albany, N. Y., September 19, 1898.

WILLIS G. TUCKER,

Director

No. 455

STATE BOARD OF HEALTH OF NEW YORK

Analysis of potable water. (Results are parts in 100,000.)

Received from Dr. W. A. Scott, health officer, Niagara Falls, N. Y. Date received, September 8, 1898; source, well of Louis Elsheimer; how labelled, "No. 2;" color and appearance, light yellowish tint, slight turbidity, slight sediment; odor at 100 F., none; chlorine in chlorides, 11.10; free ammonia, 0.0013; albuminoid ammonia, 0.0062; nitrites, present; total solids, 98.20; loss on ignition, 23.80; behavior during ignition, darkened very slightly; mineral matter, 74.40; remarks, not satisfactory.

S. B. of H. Laboratory, Albany, N. Y., September 19, 1898.

WILLIS G. TUCKER,

Director

No. 456

STATE BOARD OF HEALTH OF NEW YORK

Analysis of potable water. (Results are parts in 100,000.)

Received from Dr. W. A. Scott, health officer, Niagara Falls, N. Y. Date received, September 8, 1898; source, well of Marcus Brown; how labelled, "No. 3;" color and appearance, transparent, light yellowish tint; slight sediment; odor at 100 F., none; chlorine in chlorides, 6.80; free ammonia, 0.0011; albuminoid ammonia, 0.0035; nitrites, present; total solids, 79.80; loss on ignition, 21.60; behavior during ignition, no change; mineral matter, 58.20; remarks, not satisfactory.

S. B. of H. Laboratory, Albany, N. Y., September 19, 1898.

WILLIS G. TUCKER,

Director

ALBANY, *September 20, 1898*

Dr. W. A. Scott, *Health officer, Niagara Falls, N. Y.:*

Dear Sir—I send you herewith enclosed copies of Dr. Tucker's reports upon the analysis of three samples of water sent by you

for examination. I also enclose a copy of Dr. Tucker's letter of transmittal.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, *September 20, 1898*

HON. A. C. HASTINGS, *Mayor, Niagara Falls, N. Y.:*

Dear Sir—I send you herewith enclosed copies of Dr. Tucker's reports upon the analyses of three samples of water sent by Dr. W. A. Scott, health officer of your city, for examination. I also enclose a copy of Dr. Tucker's letter of transmittal.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, *October 13, 1898*

HON. A. C. HASTINGS, *President Board of Health, Niagara Falls, N. Y.:*

Dear Sir—At a meeting of this Board held September 26, 1898, a resolution was adopted authorizing me, as secretary of the State Board of Health of New York, to notify the board of health of the city of Niagara Falls to convene and adopt a rule or ordinance, directing the filling up and prohibiting the use of the waters of the wells located on the premises of Jacob Bingenheimer, Louis Elsheimer and Marcus Brown, in the city of Niagara Falls, the waters of said wells having upon bacteriological examination of samples of same, also upon chemical examination, been proven to be unfit for domestic use.

Therefore by virtue of the authority vested in me by resolution of this Board you, as presiding officer of the board of health of the city of Niagara Falls, are hereby directed to convene such board in order that they may take the action necessary to cause the abandonment of the use of the waters of, and the filling up of the wells on, the premises of Jacob Bingenheimer, Louis Elsheimer and Marcus Brown, being the wells complained of to your

board by the health officer, Dr. Walter A. Scott, at a meeting held July 21, 1898.

Very respectfully,

BAXTER T. SMELZER,

Secretary

NIAGARA FALLS, October 18, 1898

BAXTER T. SMELZER, M. D., *Secretary State Board of Health,*
Albany, N. Y.:

Dear Sir—I am in receipt of your favor of the 13th notifying me of resolution adopted by the Board at a meeting held September 26, 1898. I have in accordance therewith, called a special meeting of our local board of health to consider your communication.

On referring the matter to our city attorney he informs me that he fails to find your authority for taking these steps. Personally, I am in accord with the action that you have taken, but do not care to go into a controversy and come out "at the little end of the horn," and would like to have you advise me to-morrow if possible, so that I may have it Thursday, under what section of the health law you take this action.

Yours respectfully,

A. C. HASTINGS,

Mayor

ALBANY, October 19, 1898

HON. A. C. HASTINGS, *President Board of Health, Niagara Falls,*
N. Y.:

Dear Sir—We are in receipt of your communication of the 18th inst. in the matter of the State Board of Health requiring the board of health of the city of Niagara Falls to fill up certain wells, and stating that the city attorney informs you that he fails to find the authority for this Board taking such action.

In reply you are referred to the opinion of the attorney general, a copy of which is enclosed.

Very respectfully,

T. A. STUART,

Assistant secretary

STATE OF NEW YORK, ATTORNEY GENERAL'S OFFICE,

ALBANY, *October 19, 1898*

HON. BAXTER T. SMELZER, *Secretary State Board of Health,*
Albany, N. Y.:

Dear Sir—Pursuant to your request for my opinion as to the power of the State Board of Health to direct the convening of the local board of health of the city of Niagara Falls to adopt a rule or ordinance directing the filling up and prohibiting the use of the waters of certain wells in the city of Niagara Falls, such waters upon bacteriological examinations of samples thereof and upon chemical examination, having been proved unfit for domestic use, and on reading the letter of the mayor of said city, in which he says that the city attorney of Niagara Falls doubts the authority of your Board to take such steps, I have the honor to say that section 25 of the Public health law, chapter 661 of the Laws of 1893, provides as follows:

“Every such local board shall receive and examine into all complaints made by any inhabitant concerning nuisances, or causes of danger or injury to life and health within the municipality, and may enter up or within any place or premises where nuisances or conditions dangerous to life and health are known or believed to exist, and by its members or other persons designated for that purpose, inspect and examine the same. The owners, agents and occupants of any such premises shall permit such sanitary examinations to be made, and the board shall furnish such owners, agents and occupants with a written statement of the results and conclusions of any such examination. Every such local board shall order the suppression and removal of all nuisances and conditions detrimental to life and health found to exist within the municipality. Whenever the State Board of Health or its president and secretary shall, by notice to the presiding officer of any local board of health, request him to convene such local board to take certain definite proceedings concerning which the State Board of Health or its president and secretary shall be satisfied, that the action recommended by them is neces-

sary for the public good, and is within the jurisdiction of such board of health, such presiding officer shall convene such local board, which shall take the action recommended."

It is therefore my opinion that the authority of your Board to direct the convening of the local board of Niagara Falls to take the definite proceedings for the abatement of the nuisances above referred to, is unquestioned, and that it is the duty of the presiding officer to convene such local board "which shall take the action recommended" by the State Board.

Yours respectfully,

T. E. HANCOCK,

Attorney-general

VILLAGE OF AVOCA

Water supply

To the Board of Health of the State of New York:

Gentlemen—We have a matter on our hands in connection with the water supply of the village of Avoca, N. Y., which we desire to submit to you for advise; the circumstances are as follows: This village is supplied with water for all purposes by a gravity system, the reservoir being about one and one-half miles from the village. The village owns some land at and about the reservoir and this is surrounded by agricultural lands and pasture lands. A portion of the water used, and which goes into said reservoir comes from springs on lands of the village, and much of it comes from springs located on the surrounding lands belonging to others. In one field, near the reservoir there are several large springs, the water from which runs directly on to the lands of this village and thence into the reservoir; these springs are located on land used by the owner as a pasture lot and from six to twelve or more cattle run at large therein during the season; the springs are in the open ground and the water

flows along a gentle slope for about 50 feet to the lands owned by this village; these cattle are in the habit of standing in these springs and in the water as it flows from the springs and as a consequence the water has been and constantly is very badly contaminated and made very filthy and wholly unfit for use by the inhabitants of this village. This water is necessary for the supply and has been used since the water works were put in, over nine years, the natural flow of the water is just where it now flows, and while we realize the necessity for using this water to keep up our necessary supply we also realize the necessity for it being kept clean and pure.

We hereto attach a copy of a complaint which has been served on our board of health and also a copy of a notice which has recently been served on the owner of the land on which the said springs are located. He ignores the notice entirely and if he has made any change at all he has put more cattle into the field to run at large therein.

I wish you would look this matter over and advise me what should be done about it and what action should be taken and by whom.

Avoca, N. Y., *September 19, 1898.*

Yours truly,

L. E. HORTON, M. D.,

Health officer Village of Avoca

COPY OF COMPLAINT

"To the Boards of Health of the Town and Village of Avoca, N. Y.: We, the undersigned residents of the town and village of Avoca having become satisfied that the water is very badly polluted which flows from the springs on lands owned by F. E. Armstrong, in town of Avoca, near the lands of the village of Avoca, on which the reservoir of said village water works is situate; that such water flows into said reservoir and is a portion of the supply used by the inhabitants of the village of Avoca for domestic and drinking purposes, hereby make complaint of the condition so existing, and ask that the said boards of health immediately in-

investigate and take such action as may be necessary to insure the cleanliness and purity of said water.

“That the pollution of said water arises from the fact that said springs are located on lands used for pasturing cattle and livestock, which have free access to said springs and the water running therefrom and that said cattle and livestock appear to be in the habit of standing in said springs and water much of the time, greatly to the injury of the water in the purposes for which it is used.

“All of which we respectfully submit this 8th day of September, 1898.” Signed, J. H. Pettit, P. H. Neill.

COPY OF NOTICE SERVED ON OWNER

“To Frank E. Armstrong, Esq.: Take notice that at a meeting of the board of health of the village of Avoca, held Monday evening, September 12, 1898, and at a meeting of the board of health of the town of Avoca, held Tuesday, September 13, 1898, the following order and resolution were adopted and the respective health officers directed to serve a copy thereof on you at once,—to wit: Resolved, That F. E. Armstrong be immediately notified that certain springs and the water therefrom on his lands (known as the James Dyer farm) in the town of Avoca are in a very filthy and unwholesome condition and are very badly polluted by reason of a number of cattle which are pastured in said field having free access to said springs and the water therefrom; said water running directly into the Avoca village water works, which water is used for domestic purposes, and thereby endangering the health of the inhabitants of said village. We have therefore declared said conditions in and about said springs and water on your said premises a nuisance. You are hereby ordered and directed to immediately abate said nuisance and to protect said springs and the water therefrom from any and all pollution by reason of said cattle or other livestock running at large in said pasture. You will also take notice that in case of your failure to at once comply with the foregoing you will subject yourself to the penalties imposed by law in such cases.”

Dated Avoca, N. Y., September 13, 1898. C. Patterson, health officer, town of Avoca; L. E. Horton, health officer, village of Avoca, N. Y.

Served on F. E. Armstrong, September 13, 1898.

ALBANY, *September 20, 1898*

L. E. HORTON, M. D., *Health Officer, Avoca, N. Y.:*

Dear Sir—I am in receipt of your communication of the 19th inst., in the matter of the alleged pollution of the water supply of the village of Avoca, and in reply would state that it will be presented for the action of this Board at a meeting to be held at Saratoga on the 26th instant.

Very respectfully,

BAXTER T. SMELZER,

Secretary

AVOCA, N. Y., *October 30, 1898*

BAXTER T. SMELZER, M. D.:

Dear Sir—Regarding your favor of September 20th, with reference to our village water works, would like to ask if your Board has taken any action thereon or what, if anything, you propose to do with the matter. Kindly advise me at your early convenience and oblige

Yours truly,

L. E. HORTON, M. D.,

Health officer Village of Avoca

ALBANY, *October 4, 1898*

L. E. HORTON, M. D., *Health officer, Avoca, N. Y.:*

Dear Sir—In reply to your communication of October 30th (?) in the matter of providing for the protection from pollution of the water supply of the village of Avoca, it is recommended that the authorities having control of the water supply, secure the services of a sanitary engineer for the purpose of examining the watershed and formulating for approval by this Board, such rules and regulations as he may deem necessary for the protection of the water supply from pollution.

If desired, this Board will designate one of its consulting engineers to do the necessary work, his services and expenses to be paid by the municipality or corporation controlling the water supply.

Very respectfully,

T. A. STUART,

Assistant secretary

AVOCA, N. Y., October 6, 1898

To the Board of Health of the State of New York, Albany, N. Y.:

Gentlemen—We have been ordered by the board of health of this village to at once procure a sanitary engineer to examine the watershed of our water works. Will you kindly send us such a man at once and kindly advise us his name, and when he will arrive here that we may be prepared to co-operate with him.

This is the result of recent correspondence which you have had with L. E. Horton, M. D., health officer of this village.

Yours truly,

Board of water commissioners village of Avoca, N. Y.

E. W. BOZARD,

Clerk

By order of the board.

ALBANY, October 7, 1898

E. W. BOZARD, *Clerk Board of Water Commissioners, Avoca, N. Y.:*

Dear Sir—We are in receipt of your communication of the 6th inst. requesting the services of one of the sanitary engineers of this Board, to examine the watershed of the water supply of the village of Avoca.

In reply you are informed that Prof. Olin H. Landreth, one of the consulting engineers of this Board, has been instructed to visit the village of Avoca at the expense of that municipality, for the purpose of making the desired examination.

Prof. Landreth has been requested to communicate with you as to the time he can make his examination.

Very respectfully,

T. A. STEWART,

Assistant secretary

ALBANY, October 7, 1898

Prof. OLIN H. LANDRETH, *Consulting engineer, State Board of Health, Union college, Schenectady, N. Y.:*

Dear Sir.—The board of water commissioners of the village of Avoca, N. Y., having applied to this Board for the services of a sanitary engineer to examine the watershed of the water supply of that village, you are requested to make the desired examination.

Please communicate with Mr. E. W. Bozard, clerk, board of water commissioners, notifying him when it will be convenient for you to make the examination.

When you reach Avoca, it is suggested that you see the health officer, Dr. L. E. Horton.

Your bill for services and expenses, in accordance with an understanding had with Dr. Horton, is to be paid by the municipality of Avoca.

Very respectfully,

T. A. STUART,

Assistant secretary

ENGINEERING SCHOOL OF UNION COLLEGE,

SCHENECTADY, N. Y., October 17, 1898

To the Board of Water Commissioners, Avoca, N. Y.:

Gentlemen.—I beg to submit the following report on my examination of your water supply made on the 15th inst. in accordance with instructions from the State Board of Health. Briefly outlined, the water supply comprises the flow from three springs, supplemented by a moderate amount of surface water impounded in a reservoir formed by throwing a dam across the bed and valley of a small stream of about two square miles drainage area. Originally the three springs drained directly into the reservoir supply, two of them directly into the reservoir, and the third into the pipe-line just below the reservoir, but the surface water becoming frequently roiled by storms and otherwise undesirable, an inner stone reservoir was built inside the large reservoir and the

pipes from the two springs led to it so that the supply should come entirely from springs. Defects and deficiencies in the construction of the reservoir and the means for collecting the spring water and in bringing it into the supply system rendered the supply inadequate and to supplement the amount from springs, an opening from the outer reservoir into the inner one became necessary which permits a portion of the supply to come from the creek water impounded in the outer reservoir. The defects referred to which rendered the spring supply inadequate are as follows: 1 Only a part of the actual discharge from the springs is collected in the well forming the inlet to the pipe leading into the stone reservoir; this is due to the fact that the water is allowed to flow over and through the ground for 60 or 80 feet after issuing from the ground before being collected in ditches, and then flows as much farther through open ditches to the well, during which flow some water escapes into the ground and never reaches the well, while in wet weather ordinary surface water is collected with the spring water by the ditches. 2 The water reaching the well does not all reach the reservoir; this is due to the fact that the well having become filled up to the level of the end of the pipe going to the reservoir by sand and gravel washed into the well from the ditches, the end of the pipe has become nearly submerged in this material and some of it has evidently washed down the pipe line as far as the reservoir where the pipe turns upward delivering its supply through a vertical elbow; the impairment of discharging capacity causes the spring water in the well to rise to or above the ground level and some of it to escape over and through the ground. 3 The water from the springs which reaches the reservoir cannot be kept there whenever the water in the large reservoir is lower than that in the inner reservoir; nor can the water in the old outer reservoir be kept out of the inner reservoir when the latter is the lower; the reason for these defects is that when the new inner stone reservoir was built, it was constructed without securing a proper foundation for the walls with the result that the walls not only have settled but permit leaking under the walls and through the

ground under the walls. The settlement has also caused the walls to crack in numerous places, but its actual stability is not in danger provided steps be taken to stop further settlement without longer delay.

Not only is the spring supply inadequate for the reasons stated, but the character of the water—excellent in its normal condition—is very seriously impaired by pollution from cattle. Two of the three springs are on land of an adjoining owner who uses the fields where they are located for pasturing cattle; as these springs form the watering place for the cattle in these fields, they gather there, stand and lie about the springs and along the two spring runs, each of which flows for 60 to 80 feet before leaving the field and entering the water-works property belonging to the village of Avoca. The natural result of this condition of affairs is that the ground along which the spring runs is trodden into a mire and that the water flowing from the springs and to the reservoir is directly and very seriously polluted and rendered unfit for use by the droppings from the cattle. I am informed that overtures have been made by the authorities of your village to the owner of the field, looking to the village acquiring the title to the springs or to their control and protection from pollution, but that the owner will not consider the matter. I am also informed that the local boards of health of the village of Avoca and of the township of Avoca—in whose territory the field lies, have recently united in a formal notice to the owner of the field of the condition of matters at the spring and ordering him to abate the conditions there existing, which order has thus far been ignored. I found that the water in the well at the lower spring which is on the land of your village corporation and near the reservoir, had a dirty and turbid appearance as though it was largely mixed with surface water and also had some source of organic contamination; this well—like the other one—is built without any bottom and the sides are not laid in mortar so that infiltration of surface water is very probable and the entrance of organic matter from decayed wood and vegetable matter and possibly from bugs and worms is not improbable. The water-

from this well flows into the pipe line from reservoir to the village just below the reservoir and therefore is maintained at the same level as the water in the stone reservoir. The water enters this well from two small springs on the water works land near the well, and the appearance of one of the two ditches leading to the well suggests organic contamination of some kind. From the indefinite character of the flow from the several springs mentioned it was not possible for me to form an estimate of the true discharge of water from them severally, and therefore the adequacy of the aggregate flow from the three springs for the needs of the village, I cannot state, but should consider the flow to be certainly not much in excess of the needs even if it equal them.

With the facts as here stated I have been requested to advise your board as to what steps should be taken to improve the present condition of the water supply, not only in respect to the sanitary question of purity, but also with reference to such improvements in the collecting and storage system as shall make it possible to derive the entire supply from springs and to abandon the use of creek water. Both these objects are highly desirable, and the former at least, if not also the latter, is a sanitary necessity. Since the source of the most serious pollution of the spring water is on the premises of an adjoining landowner, it occurs that the problem submitted to me comprises two quite distinct divisions: 1 A consideration of legal rights and of administrative and possibly legal procedure in securing and maintaining the protection of the spring water from pollution. 2 Purely constructive and technical questions of execution.

Considering these two divisions in order, there are ample and various methods by which your village may secure and maintain the purity of the water from the springs; these methods comprise in outline the following. (a) Amicable purchase of the land containing the springs. (b) Amicable agreement with the owner by which the waters of the springs shall be thoroughly protected from pollution while leaving the title to the land and the right to use the springs under proper restrictions with the land owner. (c) Legal condemnation of the springs for public use. (d) Official

action of the local board of health declaring the pollution of the spring water to be a nuisance or detrimental to health with an order from the local board to the owner to abate the nuisance or the detrimental conditions. (e) If the owner disregards the order to abate or to discontinue, then the local board or its agents may enter on the premises and abate the nuisance or improve the conditions and collect the expense of the same from the owner by action and lien. (f) If the local board of health (the town board), declines to take the action outlined above, the matter may be brought before the State Board of Health, which body would, if the case were found to be a proper one, direct the local board to convene and take the action necessary. (g) The State Board of Health may be applied to for the enactment of rules for the protection of the water supply of the village, which rules would naturally include a prohibition of such pollution as now exists. Violation of the rule would, after proper notice, be actionable before the courts and punishable by penalty. (h) An action may be brought under the common law of nuisances for injunction against the continuation of the pollution. As each of these methods concerns the legal rights of the land owner and the village corporation, your village attorney or legal advisor should be called on for advice as to the several methods and as to the detailed procedure in which every method is followed.

Passing to the second division of the problem, viz.: The remedial and constructive operations to be carried out in improving the spring water supply so as to be satisfactory in character and adequate in quantity, the following list of improvements should be executed:

- 1 The spring well receiving the water from the springs on the water works property and the well receiving the water from the two springs on the adjoining land, should each be cleaned out, a concrete bottom placed in each, and the walls of each be made water-tight with cement mortar, or relaid in cement mortar. For the purpose of emptying the wells to clean or repair them, each should have a drain pipe leading from it with a valve just outside the wall. The bottom should be several feet below the

outlet pipe to the reservoir, which should have a strainer with small holes but of ample aggregate area of openings. The present iron pipes will apparently answer for this purpose after being cleaned out. 2 For each of the two springs on the water works property and the two on the adjoining land, the spring should be traced back to where it issues from either rock or hard-pan or firm clay; the opening should be enclosed with a small brick curb with a concrete bottom and the top arched over and covered with soil. From this curb a small vitrified tile pipe with cemented joints should be laid to the spring well into which it discharges; this pipe and the curb should be laid below frost line, or but little above it.

3 A ten-inch cast-iron pipe should be laid from the old reservoir down to the creek bed just below the dam for the purpose of draining this reservoir; this pipe should be laid in a trench cut in the old earth around the end of the dam and not through the dam, and should have a heavy grade and a gate valve on the pipe as near the reservoir as possible. 4 The earth filling around the inner stone reservoir should be removed and a stiff clay puddle-bank be laid around the outside of the wall, well tamped and puddled and carried up flush with the top of the wall; it should have a slope not less than one and one-half to one, and a thickness on top of at least two feet. This should be put in with the water out of the old reservoir and as low in the inner reservoir as will enter the discharge pipe to the village. Before the puddle-bank is laid and after the old material is removed, the walls of the reservoir should be thoroughly cleaned on the outside and all visible cracks cleaned out and cemented up. After the puddle-bank has been laid, the same operation should be carried out on the inside of the reservoir; i. e. the cracks cemented up. 5 The bottom of the inner reservoir should be cleaned of all vegetable matter and of all earth and gravel and clay down to hard material, except for a space of five feet from the walls all around, which should not be carried down as far as the remainder. During this time the supply from the spring well above the reservoir should be shut off and temporarily led into the lower spring

well. Beginning at the walls and working inward a concrete floor 12 inches thick should be laid over the entire bottom of the reservoir. Springs of water from the outer reservoir will probably be developed when the bottom is cleared, but these can be managed if properly handled. This work and the work of the puddle-bank should be entrusted only to persons having had experience in hydraulic masonry. Around the walls inside, the concrete should be laid thicker than over the general bottom. It may be advantageously made two feet thick for a strip five feet wide all around the three walls. The concrete should be carried up the slope of the dam. 6 To provide an additional supply of water in case of fire, the present wooden tube through the north wall of the reservoir should be replaced by an iron pipe twelve inches in diameter set in cement with a valve and stem; the top of this inlet pipe should be about three feet below the crest of the dam. The above steps have been outlined on the assumptions that the right to make the improvements on the springs of the adjoining land will be acquired, and that the supply from these four springs will be adequate; in the event of failure to realize either of these assumptions, it is confidently believed from personal examination that an ample additional supply can be readily secured from springs equally good in character.

My recommendations to your board are then as follows:

- 1 That your legal advisor prepare a proposition to submit to the owner of the springs by which your village shall acquire a permanent right to the water of the springs, with or without providing the owner with a supply for his cattle, including the right to enter on the land and make such construction as may be necessary to secure and maintain the purity of the spring water as indicated above. And that before submitting the above a definite order of procedure along one or more of the several lines of remedy be prepared as an alternate step.

- 2 With the above, that your board proceed to acquire the right to the water of the springs, preferably by amicable arrangement, but if not by forcible procedure.

- 3 That in order to judge as to the adequacy of the spring

supply, each of the four springs, and such others as may be in question, be carefully measured.

4 That the several items of improvement indicated above as being needed, be executed.

Very respectfully submitted,

OLIN H. LANDRETH,

Consulting engineer

VILLAGE OF NEW PALTZ

NEW PALTZ, *June 1, 1898*

State Board of Health:

Dear Sirs—This village had a map for a system of sewers approved by you October 27, 1892.

I believe that some of the inhabitants intend to construct quite an extensive and important part of said system in complete violation of such approved map as to depth, size of pipe and without a definite contract as to cost and without employing an engineer. I do not wish my name to appear as making a complaint, but would like instructions as to what ought to be done and what your Board can do to prevent this attempt to defeat the purposes of the law. The excuse is to avoid expense. The village trustees seem to be indifferent to the matter; perfectly so.

Please consider this a private letter which I thought it my duty to write you, as I made the surveys for the map which you approved and own valuable property on the street to be affected.

I thought perhaps the Board might wish an opportunity to act in the matter.

Yours truly,

HENRY L. GRIFFIS

ALBANY, *June 3, 1898*HENRY L. GRIFFIS, *New Paltz, N. Y.:*

Dear Sir—We are in receipt of your communication of the 1st inst. stating that you believe some of the inhabitants of the village of New Paltz intend to construct quite an important part of the sewer system of that village in violation of plans approved by this Board October 27, 1892.

In reply you are informed that the law provides that no changes shall be made in the sewer system approved by this Board, until plans showing such changes have received the approval of the Board.

If you will furnish this department with positive information as to proposed changes in the sewer system of your village, from the plans as approved in October, 1892, we will be pleased to cause an investigation to be made.

Very respectfully,

T. A. STUART,

*Assistant secretary*NEW PALTZ, *June 4, 1898*

T. A. STUART:

Dear Sir.—Your favor of yesterday is at hand. I inclose a clipping from the *New Paltz Times* of May 31, 1898.

About 150 feet of ditch, about five feet deep, have been opened up, extending from the 24-inch drainage tile with which they propose to connect their eight-inch tile on North Front street and extending to the railroad.

The tile not being ready the ditch has stood open two days and is now about half caved in, as no shoring was used. They have no stakes for line or grade and the work is being done entirely by common laborers.

Yours truly,

HENRY L. GRIFFIS

P. S.—The sewer is to extend from a point in Chestnut street about 100 feet north of Main street, through Chestnut street to North Front street; thence northwesterly along said North Front

street past the railroad to the drainage 24-inch tile through the normal school grounds.

This Fred Williamson is a ditch digger and proposes to do most of the work himself. The only contract there is about it is that some of the people along the street have agreed to pay their proportionate part of the expense when done, which they estimate will be \$300, a sum, in my opinion, entirely inadequate for even that which they propose to make; i. e., five feet where, by the approved map, it should be 10 feet or 12 feet deep. They have had no surveys made.

H. L. G.

ALBANY, N. Y., *June 7, 1898*

HENRY L. GRIFFIS, *State Normal School, New Paltz, N. Y.:*

Dear Sir—I am in receipt of your communication of the 4th inst. in the matter of a sewer proposed to be built in your village contrary to the plans as approved by this Board.

In reply you are informed that your letter will be submitted to this Board at a meeting to be held this month, and if you desire a hearing in the matter I will be pleased to notify you of the time and place of meeting.

Very respectfully,

BAXTER T. SMELZER,

Secretary

NEW PALTZ, N. Y., *August 4, 1898*

C. W. ADAMS, *State Engineer and Surveyor:*

Dear Sir—Yours of the 3d at hand. The sewer spoken of was laid by private residents, mostly on the east side of North Chestnut street, from the new building being erected by the Knights of Pythias, and entering the school sewer, as the old box (wooden) sewer was sadly out of repair and rotten. Each resident entering paid his pro rata share, as decided by them. The only way the village was concerned was in giving the man, having charge of the work privilege to open a trench aside of the wooden box sewer they had heretofore drained their cellars in.

Where did the complaint arise from? The Wallkill Valley R. R. Co. or from Prof. Griffis, each of which have promised trouble after the ditch was filled in. There was no knowledge of any disturbance before.

Yours truly,

ELTON J. PALMER,

President of Village of New Paltz, Ulster county, New York

OFFICE OF STATE ENGINEER AND SURVEYOR,

ALBANY, August 9, 1898

HON. BAXTER T. SMELZER, M. D., *Secretary State Board of Health:*

Dear Sir—I return the complaints and letters in connection with the sewer in New Paltz, Ulster county, N. Y. I have examined the plans for a system of sewers for New Paltz, which were approved by the Board of Health October 27, 1892. The complaint of Prof. Griffis that the plan approved was not being carried out in building the new sewer seems to be well founded, as shown by the enclosed letter from Mr. Palmer, president of the village of New Paltz, to whom I wrote, making inquiries.

The excuse for the sewer seems to be that the existing drain, being of wood, had decayed and was useless, and that the local property owners, without village authority, simply renewed the old wooden drain with vitrified pipe. As a village the system of sewers approved has not been disturbed for the reason that no sewers have been officially built. The committee is of the opinion that the Board should pass a resolution to the effect that the sewer recently built by the property owners in Chestnut and Front street is not in conformity with the plans approved on October 27, 1892.

The committee would not advise that the sewer be removed, even if we have the authority, as it apparently is not intended to supplant the sewer in the approved plans.

Very respectfully yours,

C. W. ADAMS,

State engineer and surveyor

ALBANY, N. Y., August 10, 1898

Hon. C. W. ADAMS, *Chairman of Drainage Committee, State Board of Health, Albany, N. Y.:*

Dear Sir—I have the honor to acknowledge the receipt of your report and the return of the papers in connection with the complaint of Prof. Henry L. Griffis, concerning the building of certain sewers in the village of New Paltz.

Your report, together with the papers in the case, will be submitted to the Board at its next meeting.

Very respectfully,

T. A. STUART,

Assistant secretary

COMPLAINT OF G. W. DAVISON IN MATTER OF THE POLLUTION OF OYSTER BEDS AND FISHERIES IN JAMAICA BAY

To the Honorable the Board of Health of the State of New York:

This complaint respectfully shows to your honorable Board:

That the village of Arverne is a village incorporated under the general village act within the past two years.

That in or during the winter of 1897, or spring, an appropriation was made for improving the sewerage of said village, and that in pursuance of said appropriation a sewer system has been constructed and built.

That the outlet of said sewer system and sewers is, as at present constructed and operated, Jamaica bay. That in consequence thereof large quantities of sewage, garbage and filth of all kinds is emptied into said Jamaica bay.

That under authority of an act of the Legislature passed in 1872, the town boards of Jamaica and Hempstead have leased the lands lying under water in Jamaica bay, and belonging to

said towns, to the inhabitants thereof for the purpose of growing oysters.

That at the present time about 150 to 200 acres of such land under water and in and near and around the outlet of said sewer is occupied by oysters planted there by said lessees, all of which was so invested before the building of the sewers above mentioned.

That said oysters are sold, when grown, in the vicinity and in New York and Brooklyn, and often shipped to remote points.

That the presence of filth and garbage, and the excrement from the human body in said waters, where said oysters are grown and planted, is a source of great danger to the lives of the people of this state and at such places as said oysters may be transported and consumed.

That in addition thereto it threatens to destroy the business of oyster planting in said waters, which is the only use to which said waters can be put, and which yields a revenue to each of said towns, and also the business of over 200 people employed in and about and owning the lease holds of said beds, and which in culture and seed oysters planted represents a value of from \$150,000 to \$200,000. That said beds are all held in small lots, the largest not exceeding three acres.

That further, that Jamaica bay is a resort for fishermen from the cities near it and thousands are accustomed daily to resort here. That the fish taken therefrom are carried into all portions of New York and Brooklyn. That the islands and uplands of said bay are dotted with small fishing establishments for the use of said people and about \$100,000 in wealth is represented.

That the people represented in said business, to the number of 275, have presented petitions to the town boards of Jamaica and Hempstead requesting action on their part, and that thereupon the undersigned was retained to present the matter to the State Board of Health.

That the hotel at Edgemere, between the villages of Arverne and Far Rockaway, disposes of its sewage in the same bay, and the facts as to its being a menace to health apply as well to it as to the village of Arverne, and that disposal works should

be erected or connection made with the disposal works at Far Rockaway.

All of which is respectfully submitted.

GEO. W. DAVISON,
Court-House, Long Island City

In addition to the complaint filed herein with your honorable board herewith annexed is a certified copy of the petition presented to the town board of the town of Hempstead, upon which complaint was authorized to your Board.

The following persons whose names are signed thereto are oystermen, leasing or working the oyster beds shown on the map presented as an exhibit before your expert: Samuel D. Abrams, jr., Wm. W. Smith, Edwin Abrams, Irving Bedell, Thomas Pearsall, Samuel Bowker, Henry Crocker, jr., Walter White, W. A. Taylor, A. C. Wanser, Wm. T. Mott, R. H. Smith, William H. Hicks, Frank Pearsall, George Rhinehart, Valentine Smith, C. L. Baker, Charles H. Bowker, William A. Reinhardt, Willit Mott, Henry Ryder, William H. Pearsall, Watson Pearsall, Hewlett Craft, Morris L. Pearsall, Geo. S. Smith, Charles L. Pearsall, George H. Mott, Warren Whaley, Robert Pearsall, C. A. Mott, William Brower, Theo. Bowker, P. N. Davenport, Ed. Sprague, Alfred Pearsall, Wm. H. Wanser, G. A. Albright, John H. Stein, David H. Wanser, George J. Findlay, Morris Hicks, Rushmore Hicks, Theo. Sprague, Hiram Pearsall, Pliny D. Doughty, Henry Crocker, W. Rhinehart, Freeman Sprague, Freeman Sprague, jr., Wm. T. Hendrickson, T. H. Chichester, H. Roger Sherman, W. B. Abrams, Geo. S. Mott, Lockwood Smith, John W. Jones, Floid Abrams, Harry C. Johnson, J. H. Hicks, James Hicks, Geo. W. Pearsall, Joseph H. Danes, Jarvis Hicks, Samuel W. Foote, William W. Johnson, Henry Lee Cornell, Warren Cornell, S. D. Abrams, Wm. H. Sprague, Benjamin Craft, E. S. Chaffer, Benj. Chaffer, C. F. Becker, John H. Southard, Everitt Cornell, James M. Brower, Robert Chaffer, Benj. Chaffer, Lewis Pearsall, J. J. Wood, Wm. H. Rowe, Walter Frost, Heriam Ceadmus, Martin K. Thursby, Ezra Sprague, Edgar Johnson, Thomas H. Mott, Denton Mott, John F. Berry, Elias H. Abrams, Winant

Meserole, Francis Horton, Matthew Delta Motta, Smith Sprague, Furman S. Johnson.

The following are lessees or owners of fishing stations shown on said map:

Edward H. Murr, Charles Fuller, C. Gillhaim, Robert Weilling, George E. Warner, Thomas A. Carpenter, Capt. Harry Carpenter, William Endery, Herman Winkelsith, Frank Finley, Edward H. Murr, Philip Schappert, John Patterson, Howard Bates.

The following are residents of Bayswater, and complain that their shore front is rendered noxious and unpleasant by reason of the acts complained of in the complaint herein:

Richard Mott, sr., F. L. Richmond, Mrs. C. Towle, Jerome De Grasse, R. W. Buckley, B. Wasserman, John H. Schuman, P. G. Alst, John M. Otto, Samuel J. Graham, John E. Trist Bailey, Richard Mott, jr., Henry Edw. Roehr, D. C. Bowker.

The balance are residents of the villages of Inwood, Lawrence and Far Rockaway, and in a general way feel the effects indirectly of the nuisances complained of, or are owners of oyster beds on the other side of the peninsula in Hempstead Bay.

GEO. W. DAVISON,

Attorney for complainants

To the Honorable the Health Board of the Town of Hempstead:

Gentlemen.—We, the undersigned, respectfully call your attention to the fact that the village of Arverne and the Edgemere hotel will create a nuisance by emptying the sewage of said village and hotel in Jamaica bay, as we are oyster planters in said bay and property-owners and taxpayers of the town of Hempstead, and many oyster beds are near where this sewage empties, and will cover them, to our injury. We respectfully protest against said action of said village and hotel, and petition your honorable board to pass a resolution preventing such sewage being emptied in Jamaica bay, on the ground that it is injurious to property and health:

Samuel D. Abrams, jr.,
Chas. W. Smith,
V. F. Kavanagh,

N. J. Pettit,
Morris Hendrickson,
L. E. Jeal,

Wm. W. Smith,
E. A. Wood,
C. L. Baker,
Willet Craft,
Walter A. Hickcox,
Edwin Abrams,
Walter F. Abrams,
Irving Bedell,
George Aston,
Thomas Pearsall,
Chas. H. Bowker,
Samuel Bowker,
Wm. A. Reinhardt,
H. E. Van Ripen,
Willit Mott,
Henry Crocker, jr.,
Henry Ryder,
Walter White,
Wm. H. Pearsall,
W. A. Taylor,
Watson Pearsall,
A. C. Wanser,
Hewlett Craft,
M. C. Combs,
Morris L. Pearsall,
Wm. T. Mott,
Charles W. Player,
R. H. Smith,
Geo. S. Smith,
William H. Hicks,
Chas. L. Pearsall,
George Kaiser,
George H. Mott,
Henry C. Smith,
Warren Whaley,
Frank Pearsall,

Robert Pearsall,
Geo. Rhinehart,
C. A. Mott,
Valentine Smith,
William Brower,
Philip Gunther,
Wm. K. Rhinehart,
R. G. Lamberson,
L. D. Pearsall,
Daniel Hultz,
J. D. Crosby,
S. Miller,
J. L. Seaman,
Henry Shoolbred,
P. N. Davenport,
Theo. Bowker,
Ed. Sprague,
Wm. T. Furman,
Freeman Sprague, jr.,
James W. Safford,
John H. Abrams,
David H. Merritt,
Billings S. Hempstead,
Henry Templeton,
August J. Gunther,
G. Voigt,
Wm. T. Hendrickson,
Frank W. Smith,
T. H. Chichester,
Albert Player,
H. Roger Sherman,
Alfred Pearsall,
W. B. Abrams,
John S. Doughty,
Geo. S. Mott,
Wm. H. Wanser,

Morris F. Craft,
 Emil Zemike,
 Fred. Beck,
 G. A. Albright,
 Lockwood Smith,
 John H. Crue,
 Henry Combs,
 David H. Wanser,
 John W. Jones,
 Smith B. Pettit,
 Floid Abrams,
 Geo. J. Findlay,
 Harry C. Johnson,
 Morris Hicks,
 J. H. Hicks,
 Rushmore Hicks,
 D. C. Bowker,
 Edward Rhinehart,
 James Hicks,
 Theo. Sprague,
 Merritt Smith,
 A. C. Bedell,
 Frank Bedell,
 Hiram Pearsall,

P. G. Alst, Mott avenue, Breezy point, Far Rockaway.

John M. Otto, Mott avenue, Breezy point, Far Rockaway.

Samuel J. Graham, Bayswater and Prospect avenue.

John E. Trist Bailey, Bayswater.

Richard Mott, jr., Bayswater.

D. C. Bowker,

Richard Mott, sr.,

Everitt Cornell,

Charles Ike,

James M. Brower,

Richardson Brower,

Samuel A. Seaman,

Wm. A. Abrams,

Pliny D. Doughty,

Geo. W. Pearsall,

James L. Abrams,

Hiram F. Belcher,

Henry Crocker,

Joseph H. Danes,

W. Rhinehart,

Jarvis Hicks,

C. Raisden,

Samuel W. Foote,

Freeman Sprague,

William W. Johnson,

Henry Lee Cornell,

Warren Cornell,

S. D. Abrams,

Wm. H. Sprague,

Robert Brown,

Henry Craft,

Benjamin Craft,

E. S. Chaffer,

Lenj. Chaffer,

C. F. Becker,

Henry Edw. Roehr, Bayswater.

Willis R. Brower,

John W. Fyfe, jr.,

Arthur J. Seaman,

L. L. Brower,

Albert Brower,

Florence W. Carman,

John H. Southard,

Abram W. Brower,

John H. Brower,

F. H. Walsh,

Ditmas Brower,

Samuel Brower,

W. Hutcheson,

J. A. Hutcheson, M. D.,

J. B. Hartwell, M. D.,

R. W. Buckley,

Garry E. Brower,

John Welz,

D. B. Abrams,

Emil Bruch,

D. Longworth, jr.,

Chas. P. Engelbrecht,

Alexander Combs, jr.,

B. Wasserman,

Alanson Pearsall,

John H. Schuman,

Oliver Francis,

Thomas S. Cheshire,

Daniel Jones,

P. J. Martin,

Alexander Pearsall,

Smith Carman,

Charles Brower,

C. R. Brower,

Wm. W. Hatfield,

R. H. Carman,

Charles A. Frost,

Lewis Craft,

A. S. Brower,

G. W. Strickland,

Joseph W. Mitchell,

Robert Chaffer,

Frank E. Brower,

Benj. Chaffer,

Nelson Cornell,

Lewis Pearsall,

Seaman Brower,

J. A. Kenyon,

William Combs,

M. W. Burns,

Alexander Combs,

E. W. Halpin,

Eugene C. Albro,

John J. Wynne,

Chas. Brower,

T. W. Dolan,

J. J. Southard,

L. D. Pettit,

Thos. H. Brower,

S. N. Decker,

Louis T. Walters, jr.,

W. A. Smith,

F. L. Richmond,

A. L. Vebenzahl,

Mrs. C. Towle,

J. Joseph Mott,

Jerome De Grasse,

E. J. Bushell,

James Caffrey,

Robert J. Ennever,

Charles Doane,

Samuel E. Wood,

Thomas F. Minmaugh,

J. J. Wood,

L. G. Smith,

Edward H. Murr,

J. H. Costello,

Wm. H. Rowe,

John Hennissey,

Walter Frost,
Porgwate Zanorz,
Heriam Cadmus,
Thomas Leitch,
Martin K. Thursby,
Peter Straus,
Ezra Sprague,
Thomas Tracy,
Edgar Johnson,
P. Burns,
Thomas H. Mott,
John Early,
Denton Mott,
Thomas Kane,
John F. Berry,
T. Winslow,
Albert P. Cooke,
William Caffrey,
Elias H. Abrams,
John Early,
J. H. Foster,

Henry E. Evans,
Winant Meserole,
Homer B. Jackson,
Francis Horton,
E. R. Abrams,
J. B. Wetherwax,
Louis T. Walter, jr.,
Geo. A. Johnson,
Louis T. Walter, sr.,
Matthew Delta Motta,
Hendrickson & Soper,
Smith Sprague,
S. B. Althause, jr.,
W. I. Davenport,
Frank Smith,
Furman S. Johnson,
John J. Wellskad,
Henry Bowker,
Andrew J. McTigue,
John Van Wicklen,

Charles Fuller, Broad Channel hotel.

C. Gillhaim, New York.

Robert Weilling, 70 South Ninth street, Brooklyn, E. D.

George E. Warner, Broad channel hotel.

Thomas A. Carpenter, Broad channel.

Capt. Henry Carpenter, Broad channel.

William Endery, Broad channel.

Herman Winkelsith, Broad channel.

Frank Finley, Broad channel.

Michael Haunn, Raunt station, oyster planter.

Edward H. Mun, oyster planter, Raunt station.

Philip Schappert, Goose creek, oyster planter.

John Patterson, Fishing station.

GOOSE CREEK HOTEL

Howard Bates,
John Taffner,
Mark Davis,

Mott Birdsall,
J. M. Birdsall.

STATE OF NEW YORK:

COUNTY OF QUEENS, {
TOWN OF HEMPSTEAD, { 88.:

I, James B. Curley, town clerk of the town of Hempstead, and custodian of the records of said town, do hereby certify that the foregoing is a true copy of a petition on file in the town clerk's office of the town of Hempstead.

In witness whereof, I have hereunto set my hand and the seal of the town this 26th day of January, 1898.

JAS. B. CURLEY,

Town clerk

ALBANY, *September 27, 1897*

GEO. C. DAVISON, *Court House, Long Island City, N. Y.:*

Dear Sir—I am in receipt of your complaint in the matter of the disposition of sewage from the village of Arverne and the Edgemere hotel.

In reply you are informed that your complaint will be presented to this Board at a meeting to be held September 29, 1897, at Quarantine, N. Y.

Very respectfully,

BAXTER T. SMELZER,

Secretary

SCHENECTADY, N. Y., *February 21, 1898*

HON. C. W. ADAMS, *Chairman Drainage Committee State Board of Health, Albany, N. Y.:*

Dear Sir—I beg leave to submit the following report on the matter of the pollution of oyster beds and fisheries in Jamaica bay by sewage disposed from the villages of Arverne and Far Rockaway and from Hotel Edgemere, which matter was referred to me by you on January 14th:

I went to New York on January 20th for the purpose of making the examination of the alleged pollution and met, by appointment, Mr. George W. Davison, of Long Island City, the attorney for the oyster-bed owners and representatives of the fisheries, who are the complainants. The interview developed the fact that the complainants were not prepared to make an exhibit of the facts on which their complaints were based and asked for longer time; I therefore fixed the time for the examination on January 29th. On that date I again went to New York, and, with Mr. Charles Wyeth of your New York office, whom I knew to be conversant, with the situation of the fisheries and oyster beds in Jamaica bay, went to Arverne, meeting there Mr. Davison and several of the owners or lessees of oyster beds, and also Mr. E. Dimon, representative of Mr. R. Vernon, the original owner of the site of Arverne and the one principally interested in building up the village. Later, at Far Rockaway, I also met Mr. Joseph C. Biglan, late commissioner of sewers of the village of Far Rockaway, Mr. R. A. Gordon, superintendent of sewers and sewage disposal works of Far Rockaway, and Mr. M. J. Goldner, deputy sewer commissioner of the borough of Queens, and, after the examination, Mr. R. Vernon.

In company with some of these gentlemen, at each point. I visited the portions of Jamaica bay adjacent to Arverne, using a naphtha launch for the purpose, also the Hotel Edgemere and its point of sewage disposal, as well as the village of Far Rockaway and its sewage disposal works.

The inquiry as to the alleged pollution naturally falls under three distinct heads:

1 Are the waters of the bay over and adjacent to the beds and fisheries polluted with sewage as stated?

2 Are the oyster beds and fisheries injured by having their waters polluted with sewage?

3 What action should be taken to rectify any defective or unsanitary conditions found to exist?

1 AS TO THE FACT OF THE POLLUTION OF THE BAY.

Arverne is a seashore resort occupying the narrow sand beach separating Jamaica bay from the Atlantic ocean, just where the Rockaway beach division of the Long Island railroad leaves the long trestle crossing the bay from the north. The village has a summer population approximating 4000 people and a winter population of three or four hundred, though the permanent population is evidently increasing. The village was incorporated during 1896, but is now included in the territory of the borough of Queens, Greater New York; this is the case with the former village of Far Rockaway and all the territory concerned in the inquiry. Arverne has no public sewer system officially recognized, but has a number of separate sewers built by the Arverne association, by whom the village was principally built up, and these have recently been brought together by connecting lines of sewers, still having, however, seven or eight distinct outlets all into Jamaica bay, immediately north of the village, or more specifically into Amedell canal, which is simply a dredged channel about four feet deep at low water and 35 feet wide, extending east and west along the north shore of the eastern part of the village for a distance of about 4000 feet, built to facilitate the discharge of the sewage of the village into deep water of the bay. The canal is cut through a salt-marsh projecting out into the bay, and at each end of the canal the arms of the bay, into which the canal terminates, have been dredged out to give a depth equal to that in the canal for a distance of about 1500 feet at the western terminus and about 2000 feet at the eastern terminus. The tidal run is here toward the east on flood and to the west on ebb; as a result of this it was found that the sewage discharged into this canal and its terminal channel on the west simply oscillated back and forth with the tides; to rectify this defect a tide gate has been constructed near the center of the canal which opens on the ebb but automatically closes on flood tide; there results therefore a current always toward the west, but interrupted though not reversed during flood tide. This has succeeded in keeping the sewage from moving toward the east through the canal, but it

has not prevented the same oscillation of sewage out in the branches of the bay which lie just north of the village, viz., Beach channel, Broad channel and their eastern ramifications. It is in these channels that the oyster beds are situated, concerning which the complaints are made. The situation is fully shown on the two maps accompanying this report: Map No. 1 shows the village streets, the low-water shore line of the bay, the canal and the outlets of the pipe sewers, as indicated by small circles in red ink; from these outlets the sewage reaches the bay and canal at low water through open shallow ditches or channels not shown on the map. Map No. 2 shows the entire bay and its channels as well as the villages of Arverne, Far Rockaway and Rockaway beach; the oyster beds shown by areas enclosed in red lines; the fisheries indicated by solid red blocks; the Hotel Edgemere and the Amsdell canal shown in blue. It was stated by Mr. Diamond that all of the cottages at Arverne were connected with the sewers discharging into the bay or canal. At the time of my visit the outlets and the sewage channels to the canal were all covered with ice, but the movement of sewage in the channels of the bay adjacent to the village was clearly perceptible.

Hotel Edgemere is a summer hotel situated on the sea beach about two miles east of Arverne, and at the western end of Far Rockaway inlet, a bay lying between Far Rockaway village and the ocean with its outlet at the eastern end of Far Rockaway beach. Far Rockaway inlet was originally connected with Jamaica bay by a narrow inlet called Norton's creek, said to be, however, of artificial formation, and while this was open there was a strong tidal run through this inlet, as the tide in this portion of Jamaica bay was about forty-five minutes later than the tide in Far Rockaway inlet; this insured a much freer circulation in this part of Jamaica bay than is now the case since this Norton's creek has been artificially closed, which was done by the authorities of Hotel Edgemere, on whose land the creek lies, and the hotel people seem to have established their right to close this inlet in their defense of an action brought against them by the local health board of one of the adjacent townships before the

Supreme Court. The closing was done to stop the heavy tidal scour which was threatening the safety of the hotel improvements and buildings. The present outlet of the sewer from Hotel Edgemere is not, as stated in one of the letters accompanying your reference of this matter, into Norton's creek, but is into the arm of Jamaica bay, into which this creek formerly opened, and quite near the former mouth of the creek. The hotel has a capacity of five or six hundred guests, but as it is open during the summer season only I was not able to ascertain from actual examination the effect of the sewage discharged into the bay nor its movement in the bay. The configuration of the bay at the place where the sewage is discharged is such as to permit of no material flushing out of the sewage discharged, but on the contrary simply an oscillation of the sewage laden tide water back and forth with the tide. The complaints of the condition of the bay at this point by residents and those interested in oyster beds and fishing stations is quite pronounced, and not at all out of keeping with what I should imagine to be the actual circumstances in summer.

The complaints of pollution of Jamaica bay which you submitted to me from the oyster bed owners and persons interested in the fisheries did not contain any reference to pollution from Far Rockaway, but among the papers referred to me was a letter addressed to you from Mr. Alexander Potter, of New York, relating to the Far Rockaway sewer system with which Mr. Potter claims to be connected as engineer. On account of the intimations as to sewage disposal into the bay from this village, I made an examination of the disposal works which were completed during the past summer and have since been continually treating all of the sewage from the village. I did not, however, consider that my instructions authorized me to look into the charges made by Mr. Potter as to unauthorized changes from the plans approved by the State Board of Health, but simply as to the fact of sewage disposal into Jamaica bay. I found that the system now in operation treating all the sewage from the village is one by chemical precipitation with subsequent chlorination of the effluent before its discharge, which the superintendent of sewers claims is sub-

stantially in accordance with the plans approved by the State Board in 1893, though entirely different from the plans proposed by Mr. Potter, whose connection with the sewer work was terminated before the construction of the present disposal works. I found the sewage at the time of my visit satisfactorily treated and the effluent entirely clear and without odor. A sample examined since my visit shows on standing a deposit of mineral matter without trace of organic matter. The effluent is discharged into an arm of Jamaica bay near the boundary between Far Rockaway and Lawrence; no evidence of fouling of the bay is visible, but there is a deposit of chalky material near the place where the outlet ditch meets the brackish water of the bay. As this deposit does not appear in the ditch leading the effluent to the bay, I infer that the deposit is due to effect of the chemicals contained in the effluent on the salt water of the bay. The sludge from the tanks after precipitation is not pressed, but is allowed to drain on a sand bed and then mixed with sawdust as an absorbent; it is all removed by the farmers of the vicinity as a fertilizer. Referring to the by-pass connection at the disposal works which Mr. Potter intimates may be used to allow crude sewage to be disposed directly into the bay, I made explicit inquiry as to its use and ascertained the following: When the works were first opened for use there were, unknown to the present sewer commission, several street catch-basins connected with the sewers which otherwise are on the separate system entirely; on the occasion of the first storm after the opening of the works the water from these basins came down in such volumes as to flood the tanks, making it necessary to open the by-pass valve and allow the storm-water and sewage to pass directly into the bay until the storm ceased; these basins were immediately disconnected from the sewers, and I was positively assured that with the exception of the few hours during this storm no sewage had been discharged into the bay without first being thoroughly treated. It was to provide for such contingencies as this one, and the possibility of a break-down or accident at the works—against which the duplication of parts is no guarantee—that this by-pass was constructed. It would have

been an inexcusable defect *not* to have provided it, and its existence hardly warrants the supposition that it is to be used for improper purposes.

The working capacity of the disposal plant was reported by the superintendent to be 1,500,000 gallons per 24 hours, which could be carried to 2,000,000 gallons without much forcing. This ordinary capacity will provide for a population of about 30,000 inhabitants actually using the sewers, which is more than double the present summer population of Far Rockaway. Moreover the construction of the works is such that they can be extended and the capacity very considerably increased without radical alterations or any material disturbance of the machinery or important connections. The pertinence of this fact will be seen later. It should be said that the sewage is collected and sent to the disposal works, not alone by gravity as usual, but by the Shone system, in which the sewage is allowed to flow by gravity to several low points where are located substations each having a pneumatic ejector by which compressed air supplied from the central station, automatically forces the sewage through cast-iron pipes to the station or to such an elevated point as will permit it to flow to the station by gravity. There are four of the substations at present but others may be added as necessary. There appears no evidence whatever that as at present operated the sewage from Far Rockaway is polluting the bay, and diligent inquiry among those interested in maintaining the purity of the waters of the bay and are pressing other complaints, frankly state that there is no cause for complaint from this source, nor has there been since the disposal works were opened. While I cannot of course speak for the works in future, there would appear no reason why they should not secure the same degree of purification of the sewage substantially when working up to its ordinary capacity as now, if the usual and necessary intelligent management in its operation be guaranteed. As a result of this examination it is my opinion, therefore, that the waters of Jamaica bay in the vicinity of the oyster beds and fishing stations represented in the complaints are being polluted by sewage from Arverne and Hotel Edgemere, but not from Far Rockaway.

2 ARE THE OYSTER BEDS AND FISHERIES INJURED BY HAVING THEIR WATERS POLLUTED WITH SEWAGE?

(a) Oyster beds—The possibility of oysters being the medium of communication of typhoid fever, cholera and other intestinal diseases though a question which has been raised but recently, is one on which a great deal of attention has been expended and considerable evidence secured. The following exhibit of facts bearing on the question, though by no means exhaustive, contains the substance of all the information I have been able to secure on the subject within the time at command, and is sufficient to warrant an opinion on the question at issue:

The Edinburgh Medical and Surgical Journal of October, 1808, p. 400, contains a reference to a case of "certain persons who suffered from cholera and excruciating tormina after eating oysters that had grown on the copper sheathing of a sunken ship." This case is cited not with any reference necessarily to the fact of the oysters having received sewage, but simply as an item of evidence showing the high susceptibility of the oyster to the conditions surrounding it, and the possibility of its transmitting the influence of those conditions. It is more than likely that this was a case of copper poisoning transmitted from the ship's bottom to the consumers by the oysters.

Science, November 22, 1895, p. 691. Mr. Hollingwerth, President of the Hull Scientific and Naturalists Club in annual address on October 31, 1895, said " that in 1893 cholera broke out in 50 separate places attacking 287 persons of whom 135 died; and out of these 50 localities, in 42 only single cases occurred, a circumstance unprecedented in the history of cholera and pointing to special modes of infection. Of these cases 40 per cent had eaten or handled shell fish within twenty-four hours of being attacked, and in most cases the shell-fish had come from the Grimsby and Cleethorpes beds. Cholera had been imported into Grimsby from abroad, and the position of the oyster, mussel and cockle beds of Grimsby and Cleethorpes was such that they might have been infected. Referring to this instance, Dr. Thorne

is reported in *Nature*, December 3, 1896, p. 105, as stating "that the oysters and other mollusks were so deposited and stored as to be almost necessarily bathed each tide with the effluent of sewers at that time receiving cholera discharges, and that in his opinion the distribution of these shell fish had been concerned in the diffusion of scattered cases of cholera over a somewhat wide area of England."

The Connecticut State Board of Health report for 1894 and *Science*, January 11, 1895, p. 49, describes a remarkably clear case of relation between oysters and typhoid fever: "Twenty-six students of Wesleyan university, at Middleton, Conn., were taken down with typhoid fever in close succession, the first case occurring on October 20, 1894. Those attacked were members of three fraternities, and suspicion at once fell on the initiation banquets which had occurred on the evening of October 12th. An investigation of the cause of the disease developed the fact that the only articles of food taken by these 26 students in common had been raw oysters; these oysters had been grown in the deep waters of Long Island sound, but had been freshened in the mouth of a fresh-water creek at Fair Haven, Conn. Within 300 feet from the place where the oysters were placed to "fatten" a sewer entered the creek from a house where at the time were two cases of typhoid fever. All other supposable causes of propagation of the disease were investigated by Prof. H. W. Conn. who concluded that unquestionably the oysters consumed at the fraternity banquets were the medium of transmission of the disease. To throw light on the possibility of the oyster carrying the typhoid bacilli, a trial was made in which the bacilli were forced between the two halves of the shells of oysters, where they were found to remain alive long enough to be carried from the place of freshening and used at the banquets."

Science, November 22, 1895, p. 691, says: "About twelve of those who attended the Stirling county ball on October 1st have since been seized with typhoid fever and three deaths have occurred. It is alleged that this resulted from eating infected oysters."

Nature, February 21, 1895, p. 391, cites a case of four friends who had an oyster supper together on November 5, 1894, and on November 23d three of these, and later a fourth, were found to have typhoid fever.

British Medical Journal, October 10, 1896, p. 1061: Dr. Bruce Low, reporting on the prevalence of infectious diseases in the borough of Southend, says "that sewage is deposited from sewers near a pier with oyster beds both east and west of the pier. On August 6, 1894, a watchman employed to protect these beds during a fete day took some of the oysters to a family, two members of whom were officially reported ill of enteric fever on the 26th and 30th. The physician attributed the fever to the oysters eaten. On the same fete day, August 5, 1895, the same watchman gave some of the same oysters taken from beds near a sewer outfall to several friends, three of whom were attacked with enteric fever."

British Medical Journal, January 12, 1895, p. 92, and Medical Record, October 31, 1896, p. 645: Dr. Chantemesse, of Paris, in report made to Academy of Medicine, Paris, gives the following: "An oyster merchant in the small town of Sainte André-de-Sangouins, province of Herault, received a consignment of oysters from Cette. Fourteen persons in the town, where there had not before been a case of typhoid fever for a year, were taken with typhoid fever. These fourteen persons had eaten the oysters raw. No other members of the invaded families except those having eaten the oysters were taken down."

British Medical Journal, January 18, 1896, says: "It is reported that on December 1, 1895, the annual banquet was given by the 'Brithers Scots' at the Phoenix hotel, Cape Town, at which 80 persons sat down. Nearly everybody present suffered severely next day, and the cause was considered to be the Delago bay oysters which were consumed at the banquet."

British Medical Journal, December 5, 1896, p. 1687: "Dr. Henry Fitz Gibbons reported a case of typhoid fever induced by a patient eating oysters stored in a basement of a dealer's house wherein was a case of typhoid fever."

British Medical Journal, December 26, 1896, p. 1843: A. W. Blythe, medical officer for Marylebone, reports that six persons sat down together at a restaurant and partook of oysters; all were attacked with diarrhea and other symptoms of gastro-intestinal disturbance and one of them developed typhoid fever. The oysters were said to have come from Colchester. In Nature, December 3, 1896, p. 106, it is stated that the layings in the bed of the Colne (on which Colchester is situated) from which Colchester draws its supply, "are subject to the comparatively concentrated effluent of the Colchester sewers at low water and to the additional pollution to which the river is subject at Wivenhoe and Rowhedge."

British Medical Journal, January 8, 1898, p. 103: Dr. Brown reported to the Colchester town council that several cases of typhoid fever had recently occurred in the borough, and the chain of evidence, moral and medical, was conclusive that sewage-soaked oysters of the seaport of Brightlingsea were the factors at work on the production of the epidemic.

Vaughan and Nory in "Ptomaines and Leucomaines," 1891, p. 41, says: "Pasquier reported cases of poisoning at Havre from the eating of oysters taken from an artificial bed which had been established near the outlet of a drain from a public water-closet," and that "Christison says that an 'unusual prevalence of cholic, diarrhea and cholera' at Dunkirk was believed to have been traced to an importation of unwholesome oysters from the Normandy coast."

British Medical Journal, September 28, 1895, p. 415, says: Dr. H. J. Lavis publishes in "Lyons Medical" for August 18, 1895, an abstract on "Oysters and Typhoid Fever," in which he says that when he began to practice in Naples he was struck with the number of gastric troubles, especially among newly arrived persons. On investigation he found "in the majority of cases typical typhoid fever of the Mediterranean developed. In other cases the symptoms of typhoid set in on the 12th to 16th day after ingestion of the oysters, although no apparent derangement had manifested itself immediately after eating

them." . . . "The oysters consumed in Naples and in Rome also are found in different ports where there is no reason to suspect infection from human excreta. They are kept alive, however, in eel-pots, which are sunk in the waters of the port of Santa Lucia, where they remain for weeks and even months. At a short distance from the port a large sewer empties its contents into the water, which is not deep and almost stagnant, consequently when these oysters are eaten a certain amount of the infected water is taken into the system. This infectious matter contains bacilli of typhoid and cholera."

British Medical Journal for September 12, 19 and 26, 1896, contains a very comprehensive paper entitled "Special Report on Circumstances Under Which Infectious Diseases May be Communicated by Shell-fish, with Especial Reference to Oysters," by G. E. Cartwright Wood, M. D., B. Sc. from the Royal College of Physicians and Surgeons. The report draws the following conclusions: 1, Germs of cholera and typhoid fever can exist, probably in sea-water for at least two months and remain more or less virulent and infectious in character; 2, laboratory experiments show that cholera germs do not disappear rapidly, as stated by De Giaze; 3, so of other pathogenic microbes; 4, it is concluded accordingly that contaminated sea-water near oyster beds may undoubtedly lead to their infection with pathogenic organisms; 5, the nature of such infection is obvious, but the degree we cannot estimate; 6, the only safe principle is to condemn all oysters which originate from beds subject to more or less recent contamination.

Reports and Papers on the Cultivation and Storage of Oysters and Certain other Mollusks in Relation to the Occurrence of Diseases in Man: Report of Medical Officers of the Local Government Board. By Dr. H. Timbrell Bulstrode on main paper; Dr. Klein on bacteriological aspects; and Dr. Thorne Thorne, Principal Medical Officer of the Board, who prepares the introduction. Eyre & Spottiswood, London, 1896.

This valuable report has not been directly accessible, but extracts from it are given in British Medical Journal for Novem-

ber 28, 1896, as follows: " Dr. Bulstrode demonstrates the danger of contamination which surrounds many of the beds, and Dr. Klein shows that the typhoid bacillus and cholera vibrio retain their vitality in sea-water, and he has found the colon bacillus, indicative of fecal pollution, in oysters from dangerous beds, while absent from those taken from places free from risk of sewage contamination. He has also found the typhoid bacillus in the mangled bodies and the liquor of oysters from a sewage-laden dock at Great Grimsby. Dr. Thorne denies that absence of danger can be inferred where analysis has failed to detect the specific bacilli.

Nature, January 28, 1897, and Science, October 11, 1895, give abstracts of work done by Profs. R. W. Boyce and W. A. Herdman, both of University college, Liverpool. The preliminary report was read at the Ipswich meeting of the British Association for the Advancement of Science and the final paper at the Liverpool meeting of the same association in September, 1896. The papers give the account and results of experimental investigations conducted by the authors conjointly for the purpose of determining a number of questions of great importance to the relation of oysters to public health. The observations were made both on oysters laid down in the sea under various conditions as well as in certain conditions in the laboratory.

Some of the results of greatest importance to this inquiry are: The establishment of 1, the beneficial effects of aeration and change of water around the oysters. 2, The deleterious effect of keeping the oysters in stagnant water. 3, The considerable toleration of sewage shown by the oyster and its power of absorbing large quantities of fecal matter. 4, The great increase (e. g. from 10 colonies to 17,000 colonies per sample), in the bacterial contents of the pallial cavity and of the rectum when the oyster is laid down in close proximity to the mouth of a drain. 5, The presence of more bacteria in the pallial cavity than in the alimentary canal of the oyster. 6, The fact that the typhoid bacillus does not flourish in sea water. There is no initial nor subsequent multiplication; on the contrary, it seems to die off rapidly as time

increases after inoculation. 7, The fact that the typhoid bacillus does not multiply in the stomach or tissues of the oyster. * * * 10, The fact that perfectly fresh oysters contain fewer bacteria than those that have been stored or kept in shops. 11, The enormous number of the common colon bacillus present in very many oysters obtained from shops. 12, The possibility of getting rid of bacterial infection by placing the oysters in a stream of running water. There is a great diminution or total disappearance of the bacillus typhosus under these circumstances in from one to seven days.

Medical Record, October 31, 1896, p. 645: While investigating the outbreak of typhoid fever due to oysters at Sainte André-de-Sangions before referred to, Dr. Chantemesse bought at the Paris market oysters from Marennes, Ostend, Portugal and other ports. Bacteriological examination showed the presence of numerous germs, especially the colon bacillus. Some of the best and most healthy oysters were placed in sea water purposely contaminated with dejections from typhoid cases and containing the bacilli of Eberth. After twenty-four hours in this water they were taken out and kept twenty-four hours longer; they were then found still fresh and contained numerous coli bacilli and typhoid bacilli living.

An examination of these facts leads unavoidably to the conclusion that oysters grown, laid or fattened in waters contaminated with sewage may become the medium of transmission of cholera, typhoid fever, dysentery and other intestinal diseases to those that consume them. The conditions favorable to this transmission evidently are, 1, that the sewage must contain the specific bacilli of the particular disease; 2, that the bacilli must be taken up by the oysters and retained undigested either in the liquor, the pallial cavity, or the alimentary canal of the oyster, and remain uninjured by boiling or other form of heat application till eaten; and here it should be noted that as "stews" are usually and best prepared the oysters are exposed to a temperature destructive to typhoid bacilli during much too short an interval to secure immunity from the heat application; 3, the individual eating the oys-

ters thus infected must be incapable at the time of resisting the disease. Either of these three conditions being wanting, the transmission will fail, but the probability of the concurrence of the three conditions simultaneously is so considerable—especially if we insure the second by permitting the pollution of oyster waters by sewage—as to amount to certainty almost with some of the many individuals partaking of oysters from any one particular bed.

(b) Fisheries: Considerably more than one-half the area of the bay in the vicinity of Arverne is exposed at low tide; much of this exposed area is in salt-marsh. The deposition of sludge from sewage on these exposed areas is said by residents to be very considerable and the odors during summer very disagreeable. The fishing stations involved in this complaint are located as shown by the solid red blocks on map No. 2, along the line of the Long Island railroad just north or northwest of Arverne and along channels where the sewage from Arverne must certainly be floated by the tide. I could not learn that the sewage which the waters of this part of the bay contained were detrimental to the particular varieties of fish taken here, or tended to drive them away.

Neither do I know of any means by which persons using the fish could be injuriously affected by the sewage of the waters in which they were taken. I conclude, therefore, that the only injury which the sewage entails on the fishery interests is that arising from the disagreeable smells and possibly unhealthy exhalations from the sludge deposited on the exposed areas at low tide. As these fishing stations are easily accessible from New York and suburbs and quite near extensive summer resorts, the patronage which would be injuriously affected by disagreeable conditions surrounding the stations may easily be very considerable, as the complainants charge. In this particular the disposal of sewage is unquestionably a damage to the fishery interests or more properly to the fishing station proprietors.

3 What action should be taken to rectify the defective conditions found to exist?

It has been shown that the disposal of sewage into the bay from

the village of Arverne and from the Edgemere Hotel injures both the oyster interests and the fishing stations. Are the rights of the owners of the oyster beds and fishing stations superior to the rights of the village and hotel to use the bay as a place of sewage disposal?

The common law as well as the statutory laws of the state appear to protect the riparian owners in the enjoyment of the natural functions and properties of the waters of the state as opposed to the enjoyment of the artificial functions. The claims of oyster culture should, therefore, be paramount to sewage disposal. Section 184 of chapter 974 of the Laws of 1895 prescribes: "Sludge, acid, and other refuse from any oil-works or sugar houses, or from buildings connected with the same, or any substance injurious to oyster culture shall not be placed or allowed to run into any waters within the jurisdiction of the state."

The term "or any substance injurious to oyster culture," if not intended to be confined to substances from oil-works or sugar houses, would be applicable literally to the case in question; even if intended to be applied to substances from oil-works and sugar houses, the general and sweeping term employed would indicate clearly the spirit of the law in endeavoring to protect the oyster interests of the state.

The powers given the State Board of Health to make rules and regulations for the protection of public water supplies, as given in section 70 of the Public health law, are intended to prevent the spread of just such diseases as are communicable through oysters grown or fattened in water polluted with infected sewage. A liberal interpretation of the powers of the Board, as indicated by this section, as well as their general powers, would appear to give them jurisdiction in such cases as the present one; but there appears another ground on which their right to act in this case can hardly be questioned. Section 1 of chapter 545 of the Laws of 1893, providing for the construction of sewers in unincorporated villages and hamlets, and section 3 of chapter 375 of the Laws of 1889, as amended by chapter 202 of the Laws of 1895, providing for the construction of sewers in incorporated vil-

lages, both of which laws were in force when the sewers of Arverne and Edgemere were constructed, and when the village of Arverne was incorporated, each provide for the approval of the plans for all sewers by the State Board of Health before any step is taken toward construction of the sewers. Neither the plans for the Arverne sewers nor for the Hotel Edgemere sewer were ever approved by the State Board of Health, nor, so far as I can learn, were they ever submitted to the Board. This violation of law on the part of the persons or officials responsible for the construction of these two sewer systems would appear at least to give the State Board of Health present jurisdiction as to the matter of disposal into Jamaica bay. Had the plans been submitted for the approval of the State Board of Health, the probability of the permission being given to dispose into Jamaica bay, as well as the prerogatives of the Board in protecting these waters, may be inferred from the fact that the village of Far Rockaway, in May, 1891, submitted plans for a sewer system having a proposed disposal into Norton's creek, joining Jamaica bay with Far Rockaway inlet at that time; these plans the State Board declined to approve.

Again the village presented modified plans, proposing to dispose directly into Jamaica bay, which plans were also rejected, after careful study of the case, including float experiments made by Prof. Brown and others, to ascertain the movements of sewage so disposed; and the final approval of the Board was only secured on July 14, 1892, and again on a modified plan on August 23, 1895, in both of which plans disposal works were specified. The jurisdiction of the State Board of Health over the matter of disposal of sewage into the waters of the bay, except so far as it may possibly be modified by the extension of the limits of the city of New York to include this territory, and also the past policy of the State Board of Health regarding the safety of disposing sewage into the bay appears unquestioned.

I beg to recommend, therefore, as a result of my examination into the matter:

- 1 That the disposal of crude sewage into the waters of Jamaica bay, or waters leading directly into the bay, from the village of Arverne and from Hotel Edgemere, be prohibited.

2 That the proper authorities be required or recommended to consider the extension of the Far Rockaway sewage collection system—already in operation and capable of extension to the locality—so as to collect and deliver the sewage from Arverne and Edgemere to the present disposal works in Far Rockaway.

Accompanying this report, I beg to send the two maps referred to herein, and also to return the papers sent me, together with a certified copy of the original complaint filed with the town clerk of Hempstead, containing the signatures of all complainants; also an amended or “supplemental complaint” furnished me by Mr. Davison.

I am, dear sir, very truly yours,

OLIN H. LANDRETH,

Consulting engineer

ALBANY, April 14, 1898

GEORGE W. DAVISON, *Court House, Long Island City, N. Y.:*

Dear Sir—I enclose herewith for your information, a copy of the report made by Prof. Olin H. Landreth, upon his investigation of a complaint made by you concerning the pollution of the waters of Jamaica bay, caused by the emptying of sewage therein, from the village of Arverne, also the Edgemere hotel.

As both places are now in the borough of Queens, city of New York, the attention of the health department of that city has been called to the matter and a copy of Prof. Landreth's report furnished.

Very respectfully,

BAXTER T. SMELZER,

Secretary

LONG ISLAND CITY, April 15, 1898

HON. BAXTER T. SMELZER, *Secretary State Board of Health,
Albany, N. Y.:*

Dear Sir—Your letter of the 14th inst. enclosing report of Prof. Landreth was this day received by me. I wish to thank

You for your kindness in sending me this report, and will endeavor to follow the matter up with the city board of health.

Yours very truly,
GEORGE W. DAVISON

ALBANY, April 14, 1898

The Edgemere Hotel, Edgemere, N. Y.:

Dear Sir—I enclose herewith for your information, copy of a report made by Prof. Olin H. Landreth, upon his investigation of a complaint made to this Board concerning the pollution of the waters of Jamaica bay, by the emptying of sewage therein by the village of Arverne, also by the Edgemere hotel.

The report of Prof. Landreth having been adopted at a meeting of the State Board of Health, held April 1, 1898, your attention is called to the recommendations made therein so far as they relate to the disposition of sewage by the Edgemere hotel.

Very respectfully,
BAXTER T. SMELZER,

Secretary

ALBANY, April 14, 1898

WM. T. JENKINS, M. D., *Commissioner of Health, New York City,*
N. Y.:

Dear Sir—I have the honor to transmit herewith, copy of a report made by Prof. Olin H. Landreth, upon his investigation of a nuisance caused by sewage from the village of Arverne and the Edgemere hotel, emptying into Jamaica bay.

The report of Prof. Landreth was adopted at a meeting of this board, held April 1, 1898, and as the village of Arverne now constitutes a part of the borough of Queens of the city of New York, it is requested that you call the attention of the health department of your city to the recommendations made by Prof. Landreth looking to an abatement of the nuisance.

A copy of Prof. Landreth's report has also been sent to the proprietor of the Edgemere hotel.

Very respectfully,
BAXTER T. SMELZER,

Secretary

VILLAGE OF DEPEW

DEPEW, N. Y., April 8, 1897

State Board of Health, Albany, N. Y.:

Sirs—The conditions existing here, on which this board asked that your inspector be sent here to view the conditions and enlighten us as to our powers in regard to remedies for same, are principally a real estate company owning about 900 acres in the village, particularly two streets connecting two sections of the village which at times are hardly passable.

The lots adjoining these streets are now owned almost entirely by Polanders, whose property is lower than the streets. There being no sewers there is at all times of the year water standing on these lots in which ducks and geese increase the filth. In hot weather the stench is hardly endurable.

As a board we have repeatedly asked that these streets and property be put in better condition. We have had fair promises, yet those promises have not been fulfilled.

We do not care to have work done and be in a position where we cannot collect payment for it. We need advice, but feel that the conditions cannot be realized without being seen.

If the inspector, when in this part of the state, will let us know on what date he would be here, the members of this board would meet him and this board would feel that he had rendered them invaluable assistance.

Respectfully yours,

N. McDONALD,

Secretary

ALBANY, N. Y., April 12, 1897

N. McDONALD, *Secretary Board of Health, Depew, N. Y.:*

Dear Sir—Your communication of the 8th inst., in explanation of reason for requesting an inspector of this department sent to Depew, has been received.

In reply you are informed that your request will be submitted to this Board at a meeting to be held the latter part of this month.

Very respectfully,

BAXTER T. SMELZER,

Secretary

DEPEW, N. Y., May 5, 1897

State Board of Health, Albany, N. Y.:

Dear Sir—Will you kindly inform this board of the result of the action of the State Board on our request that an inspector be sent here.

Respectfully yours,

N. McDONALD,

Secretary

ALBANY, N. Y., May 12, 1897

N. McDONALD, *Secretary Board of Health, Depew, N. Y.:*

Dear Sir—Your communication of the 5th inst., asking the result of the action of this Board on your request to have an inspector sent to Depew, has been received.

In reply you are informed that one of the consulting engineers of this department will be sent to your village at the expense of your municipality for the purpose of investigating as to the unsanitary conditions complained of.

Very respectfully,

T. A. STUART,

Assistant secretary

DEPEW, N. Y., June 8, 1897

State Board of Health, Albany, N. Y.:

Sirs—At a meeting of this board last evening I was directed to write you, asking that a consulting engineer be sent here at the expense of this municipality, if need be, as soon as possible.

We are in urgent need of his services.

Please advise us on what date he can be with us, that this board can meet him.

Respectfully yours,

N. McDONALD,

Secretary

ALBANY, N. Y., *June 16, 1897*N. McDONALD, *Secretary Board of Health, Depew, N. Y.:*

Dear Sir—Your communication of the 8th inst., requesting that one of the consulting engineers of this Board be sent to Depew for the purpose of advising with the local board of health in the matter of remedying certain unsanitary conditions, has been received.

In reply you are informed that Mr. Adams, the chairman of the drainage committee, has been requested to name the engineer he desires sent, and upon receipt of his reply we will notify you, with the understanding that the authorities of Depew are to pay for the services and expenses of the engineer.

Very respectfully,

BAXTER T. SMELZER,

*Secretary*ALBANY, *June 16, 1897*HON. C. W. ADAMS, *Chairman of Drainage Committee, State Board of Health, Albany, N. Y.:*

Dear Sir—Under date of March 29, 1897, the board of health of the village of Depew requested the services of a sanitary engineer to advise with them in the matter of causing to be remedied certain unsanitary conditions. I replied at the time that one of the consulting engineers would be sent, if desired, at local expense.

I am in receipt of a request within a few days for the services of a consulting engineer under the terms proposed, and would ask that you designate which of the consulting engineers you desire sent to Depew.

Very respectfully,

BAXTER T. SMELZER.

Secretary

OFFICE OF STATE ENGINEER AND SURVEYOR

ALBANY, *June 17, 1897*Hon. BAXTER T. SMELZER, M. D., *Secretary State Board of Health:*

Dear Sir—I would suggest that you direct Consulting Engineer Landreth to go to Depew, he being the nearest man, and I have already given Mr. Bogart some matters upon which he is now engaged.

Very truly yours,

C. W. ADAMS,

*State engineer and surveyor*ALBANY, *June 19, 1897*Hon. C. W. ADAMS, *Chairman of Drainage Committee, State Board of Health, Albany, N. Y.:*

Dear Sir—In compliance with instructions received from you under date of June 17, 1897, I have directed Prof. Olin H. Landreth to proceed to Depew in compliance with a request received from the board of health of that village for the services of a consulting engineer of this Board.

Very respectfully,

BAXTER T. SMELZER.

*Secretary*ALBANY, *June 19, 1897*Mr. N. McDONALD, *Secretary Board of Health, Depew, N. Y.:*

Dear Sir—I have this day directed Prof. Olin H. Landreth, one of the consulting engineers of this Board, to visit Depew for the purpose of investigating as to certain alleged nuisances and advising with the local board in connection with abatement of same, the services and expenses of Prof. Landreth to be paid by the village of Depew.

Prof. Landreth has been requested to communicate with you as to the time he will reach Depew.

Very respectfully,

BAXTER T. SMELZER,

Secretary

SCHENECTADY, N. Y., *March 30, 1898*

Hon. C. W. ADAMS, *Chairman of Drainage Committee, State Board of Health, Albany, N. Y.:*

Dear Sir—I beg to submit the following report on the drainage defects in a portion of the village of Depew, of which complaints were submitted to the State Board of Health during the summer of 1897, and examined by me during September last.

The complaints submitted relate to the imperfect drainage of the lots on both sides of Panola and Naoga streets, between Erie Railroad street and Sawyer avenue. A sketch of these streets is appended hereto.

The natural surface of the ground in this vicinity is very nearly level, having a total fall of only two feet from the northwest corner to the southeast corner of the block, a distance of about 800 feet.

With the nearly level surface and the blocks divided into lots and a majority of them built upon, the only possible lines of drainage are along the street lines; which ordinarily would have furnished at least fair drainage, even with the level condition of the lots. Just here lies the cause of the difficulty. The streets were laid out and macadamized in advance of the building up of the houses on these streets, and in doing so the street grades were established much too high to permit of drainage of the lots to the streets. I took levels in the lots, in both gutters and in the center of the street along the whole length of both Panola and Naoga streets, and found that in several places the lots were lower than the bottom of the gutter fronting them. In many other cases the lots were but slightly above the bottom of the gutters fronting them, and in but very few were the lots sufficiently above the gutters to secure proper drainage to the gutter. The gutters discharge into catch-basins placed in the center of the block, the gutters being graded from each end toward the center of the block. These catch-basins deliver into the sewers which flow south along both these streets. Apart from one or two stoppages in these sewers, which were being traced while I was there, there would appear no trouble with the drainage so far as relates to the sewers, the defects lying

entirely between the lots and the catch basins. The gutters are formed by plank set on edge, retaining the sidewalk berm and the street surface graded down to this plank. In many places this plank has rotted away or has been displaced. This fact, together with the very flat grades which the gutters have had given them cause the flow among the gutters to be quite badly interrupted.

Two different remedies for this defective condition are possible: 1. Drainage along the backs of the lots into new ditches or gutters to be made for that purpose; 2, drainage by the street gutters after lowering them and facing them with stone or concrete, and giving them such grades as will insure safety against ordinary stoppages. The first plan would be worthy of careful attention if there were alleys along the rear of the lots. This is not the case, and many of the premises have out-buildings located on or closely up to the rear lines. Under these conditions an open ditch or gutter, even if a location could be secured for it along the rear lines, would be constantly subject to neglect and abuse and would threaten to be a source of danger. On this account I do not think the plan should be considered.

The second plan of drainage by street gutters requires the lowering and otherwise improving the gutters both in materials and grades. This lowering of the gutters will require the lowering of the entire street surfaces since my levels show that even now the gutters are from 0.8 feet to 1.7 feet, averaging 1.4 feet below the center line of the streets, with a width between gutters of only about 30 feet. This crowning is much too great at present and could not be increased.

The two streets in question were laid out by the Depew Improvement Co., a corporation which originally owned all of the territory of the present village, and by whom the village was established. This company has sold nearly all the lots on these streets to private individuals, but the streets, nor their improvements, have never been formally turned over to the village corporation. Whatever improvements are now made on these streets, such as care of street surfaces, repairs to sidewalks or

care of sewers is and has been done solely by the improvement company who, I should have stated, made the original street improvements on these two streets, including grading, macadamizing, guttering, sidewalks and sewers.

These facts have been stated in order to enable the legal advisers of the State Board of Health to determine the responsibility for the needed improvements.

As a result of my examination I beg to recommend that proper official action be taken to secure the carrying out of the following improvements: 1, The lowering of the street gutters to an extent to insure prompt and ready drainage from each lot to the street gutter; 2, the establishing of such gutter grades as will insure the ready running off of drainage water and will render stoppages unlikely; 3, the formation of the gutter of such curbing and paving as will be durable in itself and safe against displacement; 4 the lowering of the street grades and flattening of the crowning to make the streets conform to the new guttering within safe and proper degree of crowning.

The accompanying sketch does not show the levels taken except at a few points along the centers of the streets where the elevations above an assumed datum are given. They indicate, however, the longitudinal grades of the streets.

I am, dear sir, very truly yours,

OLIN H. LANDRETH,

Consulting engineer

ALBANY, April 14, 1898

N. McDONALD, *Secretary Board of Health, Depew, N. Y.:*

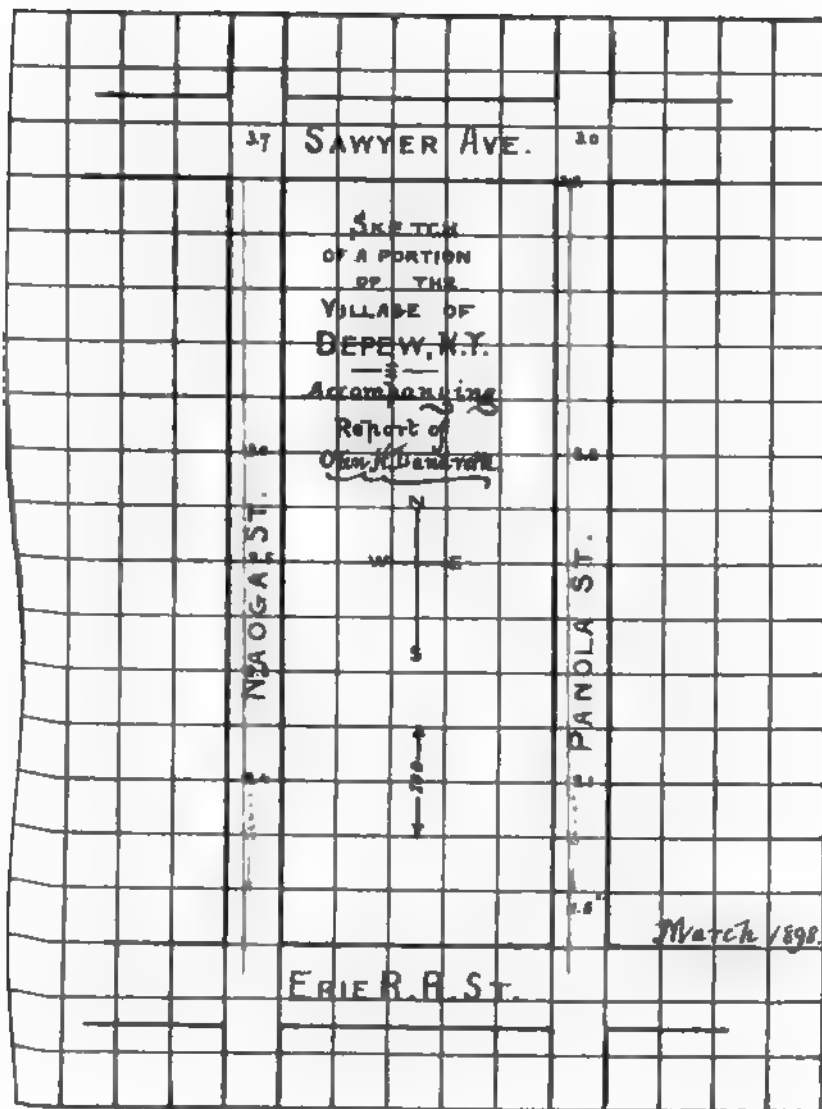
Dear Sir—I transmit herewith, for the information of the board of health of the village of Depew, a copy of the report made by Prof. Olin H. Landreth on the drainage defects found to exist in a portion of your village.

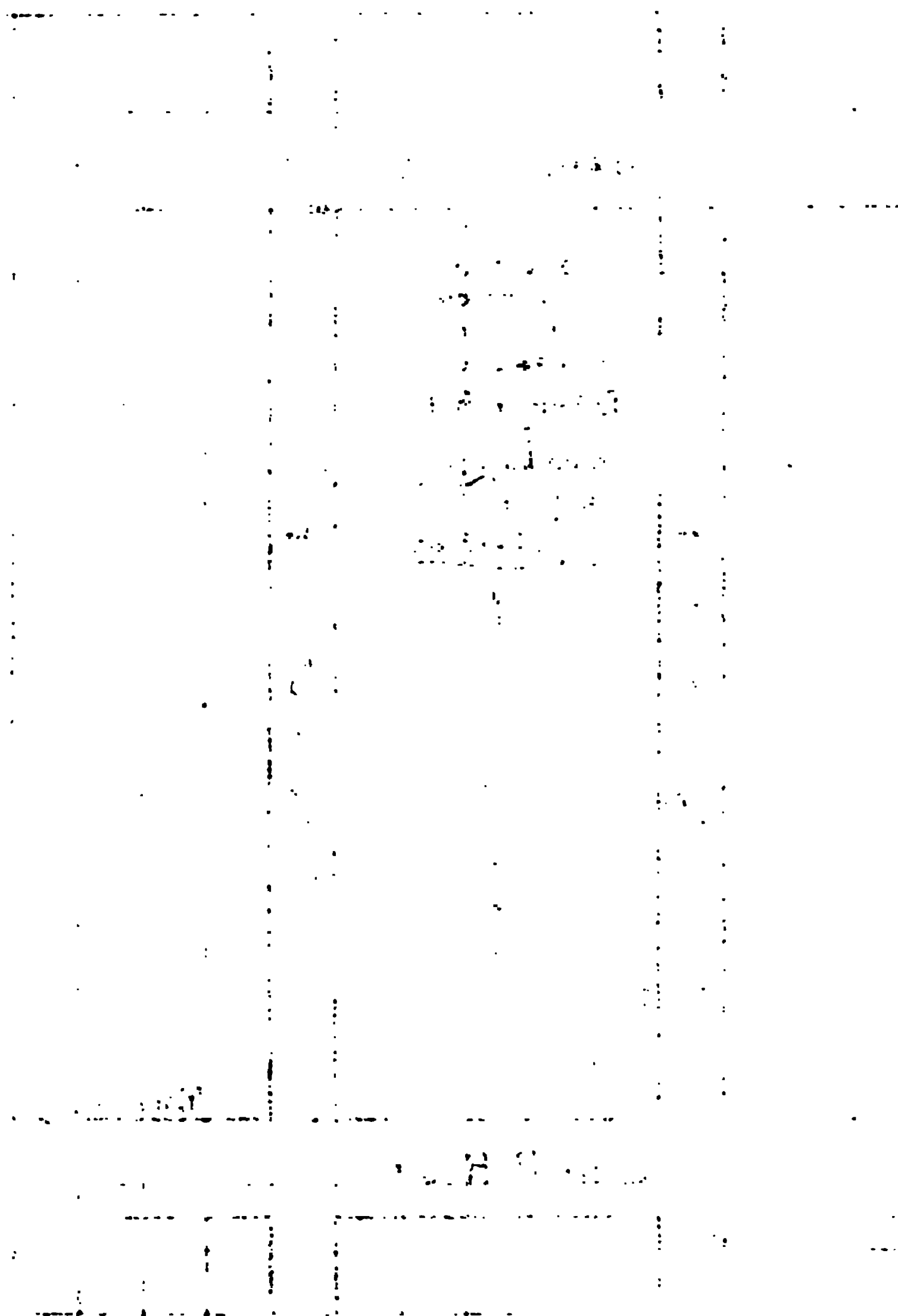
The report of Prof. Landreth having been adopted at a meeting of this Board held April 1, 1898, I am directed to request that you inform this department of such action as may be taken by the board of health of Depew on the report.

Very respectfully,

BAXTER T. SMELZER,

Secretary





DEPEW, N. Y., *April 20, 1898**State Board of Health, Albany, N. Y.:*

Dear Sirs—At a meeting of this board held on the 18th inst., the report of Mr. Olin H. Landreth, on the drainage defects of Penora and Neoga streets in this village, were adopted by this board.

I also notify you of the reappointment for the term of ~~one~~ year of G. N. Jack, M. D., as health physician; also of my reappointment for the ensuing year as secretary and registrar.

Very respectfully,

N. McDONALD.

ALBANY, *April 21, 1898*N. McDONALD, *Secretary Board of Health, Depew, N. Y.:*

Dear Sir—I am in receipt of your communication of the 20th inst. stating that the report of Prof. Olin H. Landreth on the drainage defects in your village was adopted by the local board, and will present the same at the next meeting of this Board.

Very respectfully,

BAXTER T. SMELZER,

Secretary

DRAINAGE QUESTION AT ATHENS

There was submitted to the State Board of Health the matter of drainage of cellars, and one in particular, in the village of Athens.

This village, of about 2500 population, has no public water supply and no street sewers, save on one principal street that runs up from the river (Hudson) there is a street sewer of tile for a short distance, not long since laid. This street rises with a somewhat abrupt grade; about three village blocks upon it beyond the point where the sewer is carried is the cellar in question. This cellar contains two feet of water, which is foul water and has a sewage odor. It has existed there since a drain outlet to it

was cut off about a year ago by order of the village trustees because it emptied into the street gutter below the house in such volume and in such a manner because of the grade as to overflow the sidewalk, creating much ice in cold weather.

The location is elevated and should be well drained. Cellars to adjacent dwellings have no standing water, but show some dampness and apparently are relieved of accumulation by drains. There ~~is~~ no apparent reason why this cellar should collect water more than its neighbors; I found no source from which it would be likely to come to it especially. I think the water in it is chiefly soil water and increased in amount now by recent abundant rains. It is probably made unclean by receiving also the waste from two kitchen sinks in the house.

The best remedy for this would be to extend the aforementioned street sewer to this point. Objections to this remedy are: it would cause a delay of several months to secure relief by it; it would be an expensive remedy, if it were laid deep enough to accommodate the dwellings on the lower side of the street, since they are at a much lower level and moreover the number of dwellings to be supplied is small; it is not desired by part of the owners of property adjoining; there is no public water supply to furnish flushing desirable for a tile sewer.

A more speedy relief should be found and this was to lay a six-inch tile drain in the gutter line on the upper side of the street at depth just sufficient to drain the cellars, to have the half dozen houses closely adjacent find relief for the soil water of their cellars through it, cutting off from it all sink-water for which other provision should be made, and to allow this drain to discharge into the open gutter below. If only soil water enters this drain it will not probably create any nuisance. If it should be found to do so it can then be carried on to the existing street sewer, a few hundred feet further.

I think this will speedily and satisfactorily give the desired relief.

Respectfully,

F. C. CURTIS

June 21, 1898.

VILLAGE OF CHITTENANGO

CHITTENANGO, September 15, 1898

To the Honorable Board of Health of the State of New York:

Complaint having been made to me as health officer of the village of Chittenango, N. Y., of the foul and unhealthy condition of a certain stream running parallel and close to Seneca street, the principal street of the village, I have inspected the same, and herewith enclose a copy of my report to the board of health of Chittenango. The majority of said board conclude they have no jurisdiction or power to cause the privies standing on said stream to be removed. Therefore, as health officer, I would respectfully submit the whole question for your decision and I herewith enclose a petition to your honorable Board to send a competent officer to examine said stream, that the whole difficulty may be settled permanently.

Respectfully submitted.

S. D. HANCHETT, M. D.

CHITTENANGO, N. Y., September 15, 1898

To the Honorable Board of Health of the State of New York:

We, the undersigned citizens of the village of Chittenango, N. Y., would respectfully call your attention to a stench nuisance existing in the village of Chittenango, Madison county, N. Y. said stench nuisance being a certain stream running parallel and near Seneca street, said Seneca street being the principal street of said village. We would respectfully ask your earliest attention to the same.

LUKE McHENRY, *President of village*THOMAS H. MITCHELL, *Trustee*GEORGE E. MERWIN, *Trustee*S. D. HANCHETT, *Health officer*

CHITTENANGO, September 15, 1898

To Secretary of the Board of Health of Chittenango, N. Y.:

On complaint of Thomas H. Mitchell, alleging that the stream passing through the premises of certain property owners situate on the east side of Seneca street, in Chittenango, N. Y., between Clement Cook's property and the property of P. P. Carl, which is a nuisance and detrimental to public health, I have investigated the same and found that through defects caused by construction and narrowing of the water channel the stream was and is in a constant state of pollution, from which a foul and noxious stench is constantly arising. Said stream is one continuous privy vault from the south line of P. P. Carl's lots to the north line of the engine house lot, and that there is not enough of flow of water in said stream to carry off the droppings from said privies, said privies causing constant contamination of the water. I have served notices upon each and every property owner and tenant to clean the stream and make it of uniform width and remove all obstructions, including privies. Some of the property owners refuse to remove their closets and also refuse to make the ditch of uniform width of two feet; I therefore respectfully submit the whole question to the board of health of said village of Chittenango, N. Y., and I, as health officer, stand ready to enforce your orders.

S. D. HANCHETT,

Health officer

ALBANY, September 16, 1898

S. D. HANCHETT, M. D., *Health officer, Chittenango, N. Y.:*

Dear Sir—I am in receipt of your communication of the 15th inst., with enclosure in the matter of an alleged nuisance in your village, caused by the unsanitary condition of a stream which runs close to the principal street of the village.

As you suggest the desirability of a competent person being sent from this department to make an investigation, you are informed that one of the consulting engineers of the Board can be sent at the expense of your municipality.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, N. Y., October 6, 1898

Prof. OLIN H. LANDRETH, *Consulting engineer State Board of Health, Union college, Schenectady, N. Y.:*

Dear Sir—I am directed by Hon. C. W. Adams, to request that you proceed to Chittenango, N. Y., for the purpose of investigating as to certain unsanitary conditions alleged to exist in that village, and after investigation, to instruct the authorities as to the means necessary to be taken in order to remedy such unsanitary conditions if found by you to exist.

For your information, we enclose the complaint made to this Board, and the correspondence in connection with same, all of which please return with a copy of your report.

Your bill for services and expenses in connection with the investigation is to be settled by the municipality of the village of Chittenango, in accordance with our understanding had with the health officer, Dr. S. D. Hanchett.

It is requested that you communicate with Dr. Hanchett, notifying him when you can make the desired investigation.

Very respectfully,

T. A. STUART,

Assistant secretary

SCHENECTADY, N. Y., October 24, 1898

To the Health officer and Board of Health, Village of Chittenango, N. Y.:

Gentlemen—Agreeable to instructions from the chairman of the drainage committee of the State Board of Health, Hon. C. W. Adams, that I investigate certain alleged sanitary defects in your village, and "after investigation, to instruct the authorities as to the means to be taken in order to remedy such unsanitary conditions if found to exist," I beg to say that I have made the necessary examination of the locality in question and have to report that the conditions as found by me fully justify the complaints submitted by several members of your village government to the State Board of Health, which complaints are the cause of the preliminary action of the Board in ordering an investigation.

The condition of the drain or stream along the old canal lots on Seneca street in your village and the presence of the numerous privies discharging their contents into this stream constitute, in my opinion, not only a stench nuisance, but such an unsanitary condition as to make it clearly a menace to public health, warranting prompt, vigorous and permanent abatement. The matters of determination and abatement of nuisances and conditions detrimental to health rest originally with your board, and ultimately with the State Board of Health, and the State Board will not exercise the authority given it by section 25 of the Public health law, to order abatement, and by section 31 to enforce such order, until it is clearly shown to be necessary by the unwillingness or inability of the local board to handle the case with the needed promptness and vigor. My instructions therefore warrant me in assuring your board that although formal complaints of the conditions prevalent along the stream are before the State Board, still that body will suspend action looking to its direct abatement of those conditions till your board may have had a reasonable time in which to accomplish whatever result may be necessary; and the matter is therefore still in your hands. I am informed by Mr. Spencer, secretary of your board, that a resolution ordering the stream along the canal lots to be cleaned, made of a uniform width of two feet, and properly protected against caving in, was adopted at a meeting of your board on or about September 12, 1898, but that no notice of such resolution has yet been furnished the health officer, who is your executive officer and the one invested by law with the execution of orders issued by your board. The resolution did not, I am informed, include any reference to the privies situated over the stream and which constitute its worst element of pollution and obstruction. Your health officer, Dr. S. D. Hanchett, has informed me that although he has received no notice of the formal action of your board referred to above, he did receive informal authority from a majority if not all the individual members of your board, during the month of August, 1898, to proceed to issue orders to the owners of the premises where the nuisances existed, to clean the stream, remove all obstructions, including privies, and to make the ditch or stream of a uniform

width of two feet and two feet deep. While the informality of the proceeding of giving the authority to the health officer would not impair the validity of his orders to owners if properly issued to them, a question of fact as to the intention of the members of the board in the issuing the authority to the health officer would impair the validity of orders issued by him, and therefore he is entitled to have the order of the board of health conveyed to him in such manner as shall leave no question as to the intentions of the board in regard to the character or extent of the authority issued; preferably in the form of a certified copy of the action or resolutions adopted by the board. If no question or uncertainty exists as to the nature or extent of the instructions which the members of the board intended to convey to the health officer, he should proceed, under those instructions, to order and see carried out the changes and improvements which the board directed him to execute, since they are not only greatly needed, but are clearly within the province of the board of health to order; but if there exists a misunderstanding or uncertainty as to just what the members of the board intended, then the health officer should suspend the execution of such portions of the instructions of the members of the board as may be in question or uncertain, and call on the board for more definite instructions on these portions. While it is the right (and the duty in this case) of the local board of health to order the privies removed from the stream, the board has no right to specify just what shall be offered by the owners as a substitute therefor though it may specify one or more substitutes which it would approve if offered, but must always concede the owner the right to any form of substitute which will fully meet sanitary requirements as the board understands them. If any of the plans or methods offered or proposed comprise the use of the stream as a vehicle for the removal of the night soil from the privies, that would constitute the stream a sewer, and plans for such use of the stream would have to go before the State Board of Health for approval before they could be used or adopted. (See section 260 of the village law of 1897, being chapter 413). Certainly, nothing short of a water tight pipe or conduit would pass the approval of the State Board as a sewer and in ad-

dation they would require suitable manner of connection and flushing of the privies into the sewer, and a suitable means of sewage disposal at the outlet, and as your village has as yet no water system, the proper flushing of even one sewer would be difficult if at all feasible. In the approval of substitutes for the present privies there is another point of great importance which should be considered by your board. The water supply of your village is derived from private wells which are sunk into either the first or the second gravel, in each case passing into or through the first gravel; it is a matter of the first importance that this first gravel therefore be kept unpolluted by anything that may impair its character as a domestic water supply; the digging of cess pools or privy vaults into or nearly into this upper gravel, which I understand lies near the surface, should therefore be prohibited. Percolation of polluted water through the soil furnishes so unreliable and so imperfect a remedy as make it unsafe to depend on. Nothing is more common than the organic pollution of wells by vaults and cess-pools which do not of necessity need to be immediately adjacent, and wherever organic pollution is possible pathogenic infection is liable.

My recommendations to your board are then as follows:

- 1 That your board convene, examine the premises carefully, and determine whether the conditions constitute a nuisance or are detrimental to health.

- 2 If found to be a nuisance or detrimental to health, they should be so declared by your board by formal action.

- 3 In the event of their being declared a nuisance or detrimental to health, it will be the duty of your board to enact an order, without publication, for the abatement of the nuisance or detrimental condition so declared, and to deliver the order or a copy of the resolution calling for abatement to the health officer.

- 4 It will then be the duty of the health officer to serve a copy of the order, or in the case of a resolution to frame and issue an order to each owner of property on which any such nuisance or detrimental conditions exist, ordering the abatement of such nuisance or conditions. In the case of a tenant occupying the premises the notice should be served on the tenant and, where accessible, also on the owner.

5 In the case of the stream, in which *uniformity* in the manner of abatement of its conditions is essential, it will be proper for the order issued to individual owners to indicate the manner and the dimensions of the improvements.

6 In the event that any owner or tenant declines or neglects to comply with the order duly issued, it will be the duty of the board of health to enter on the premises and abate the conditions or nuisance there existing and to charge the expense of such abatement against the owner or occupant, all in accordance with sections 26 and 27 of the Public health law.

7 I respectfully request that I may be informed not later than November 5th, as to the action your board may take in this matter and the progress made in securing the abatement desired, in order that I may make my report on the matter to the State Board of Health.

I am, dear sirs,

Very respectfully,

OLIN H. LANDRETH,

Consulting engineer State Board of Health

CANISTEO, N. Y., November 9, 1898

HON. C. W. ADAMS, *Chairman Drainage Committee, State Board of Health, Albany, N. Y.:*

Dear Sir—In the matter of the Chittenango drainage complaints, concerning which I submitted to you a preliminary report on October 24th and accompanied it with a copy of a report made to the health officer and board of health of Chittenango at your direction, also on October 24th. I beg to report that I have just received from Dr. S. D. Hanchett, health officer, a letter, dated November 7th, stating that no steps had been taken by the local authorities toward the improvement of the conditions complained of, but that the health officer and one member of the board of health were ready to execute any order that the State Board of Health may make.

As this failure on the part of the local board of health to take any steps to improve the conditions complained of by four members of the village government in two complaints of September

15th addressed to the State Board of Health, renders action on these complaints necessary by the State Board of Health. I beg to state in addition to the facts set forth in the correspondence and complaints from Chittenango, and in my report to the local authorities, that the conditions are fully as bad as indicated in the complaints. The small stream referred to, and which flows along the abandoned bed of an old branch canal, has a small drainage area, less than one-half square mile, but is fed almost wholly by several small springs. On the day of my examination, the 22d of October, the stream was flowing about six cubic feet of water per second, which was reported by two gentlemen familiar with the stream to be fully three times its ordinary summer flow. On this stream within a stretch of less than 800 feet are located at least 17 privies, each placed immediately over and spanning the stream, and dropping not only its normal discharge into the stream, but many also being the dumping ground for the household garbage and domestic waste of the premises. After rains the stream carries as sediment a black muck, which causes the solid matter from the privies to be deposited along the stream bed as a foul sewage sludge, so that the stream in fact is one elongated cesspool in the immediate vicinity of the houses on the lots, as the lots are both narrow and shallow. This ditch has been uninterruptedly used as the drainage of the water shed and springs since the abandonment of the branch canal, more than 30 years ago, and the deeds of these lots, given by the state to whom the canal bed reverted on its abandonment, stipulate the right of drainage through lots.

It would appear from local accounts and the facts gathered, that the local board of health—composed of three members—at first authorized and supported the health officer in his efforts to abate the unsanitary conditions, but that when the action of the health officer in his efforts to improve the condition developed opposition from the owners of some of the lots on which the nuisance existed, the support of the two members of the board of health was withdrawn; and that these two members have threatened to resign if compelled to abate the nuisance complained of, the *existence* of which they do not deny.

I beg therefore to recommend that the State Board of Health proceed to take the action on these two complaints of September 15th herewith returned which the Public health law specifically indicates for such cases.

I am, dear sir,

Yours very truly,

OLIN H. LANDRETH,

Consulting engineer

ALBANY, December 24, 1898

G. B. HILL, *President Board of Health, Village of Chittenango, Chittenango, N. Y.:*

Dear Sir—Under date of September 15, 1898, the attention of this Board was called by a petition signed by Luke McHenry, president; Thomas H. Mitchell and George E. Merwin, trustees of the village of Chittenango, also Dr. S. D. Hanchett, the health officer, to certain alleged unsanitary conditions existing in your village, caused, as stated in a communication to your board from Dr. Hanchett, under date of September 15, 1898, by reason of the use of a stream running parallel with Seneca street for the deposit therein of the contents of privy vaults, offal, garbage and other unsanitary substances.

An investigation having been made by Prof. Olin H. Landreth, one of the consulting engineers of this Board, his report upon such investigation (a copy of which was sent to your board), fully justifies the complaints made.

Therefore by virtue of the authority vested in us under section 25 of the Public health law, you are hereby directed to convene the board of health of the village of Chittenango within 15 days from the date of this notice, for the purpose of taking the action necessary to cause the abatement of the nuisances complained of, provision for which is made by sections 25, 26 and 27 of the Public health law, a copy of which has been sent to you.

Please acknowledge the receipt of this communication.

Very respectfully,

BAXTER T. SMELZER,

Secretary

DANIEL LEWIS,

President

CHITTENANGO, *September 4, 1899*

BAXTER T. SMELZER, M. D.:

The law in regard to vaccination in our union school district has been fully complied with. The stream or ditch running parallel with Seneca street in the village of which a former complaint was made to your Board, September 15, 1898, remains in the same condition at this time. The president of the board of health, Mr. Hill, after receiving your instructions last fall, resigned; also, Mr. Spencer, secretary of the board, resigned, in order to avoid carrying out your instructions. A new board was appointed last spring and they have refused to receive your instructions, but passed a resolution of which I send you a copy and after serving notice upon property owners in accordance with the resolution of the board, C. A. Hitchcock, a lawyer and a member of the board of health of said village, says the resolution of the board and the notice to property owners is defective and not worth the paper it is written upon. I submit the notice and resolution to your inspection and if you find it is not in accordance with the law, I see no other way only that your State Board of Health take hold of the matter and abate the nuisance complained of. An early reply is desired.

Yours respectfully,
S. D. HANCHETT, M. D.,
Health officer

A copy of the resolution of the board of health of Chittenango, dated July 10, 1899:

To

You are hereby required to immediately abate a nuisance on your premises on Seneca and Rouse streets road, viz.: A ditch or stream to be cleaned and made two feet wide and two feet deep on grade of map on file with the village clerk, and that all privies and obstructions be removed from said ditch within 10 days after the service of this notice, or the same will be executed as the board may otherwise provide and the expense thereof will be collected from you together with the penalty for neglect in relation thereto. By order of the board of health of the village of Chittenango.

S. D. HANCHETT,
Health officer

Hereunto annexed is a copy of the resolution of the board of health:

To S. D. HANCHETT, *Health officer*:

Resolved, That the board clean the ditch from P. Carl's north line to George Clark's north line, two feet wide, two feet deep, on grade of map on file with village clerk, and that all privies and obstructions be removed from said ditch.

Further Resolved, That health officer serve notices on the property owners along said ditch to clean ditch in accordance with resolution within 10 days of serving of notices.

J. V. FLAHERTY,
Clerk

CHITTENANGO, N. Y., July 10, 1899

ALBANY, September 11, 1899

S. D. HANCHETT, *Health officer, Chittenango, N. Y.*:

Dear Sir—I am in receipt of your communication of the 4th inst., in which you state that the board of health of your village have failed to cause the abatement of a nuisance in the village of Chittenango, as directed by an order from this Board under date of December 24, 1898.

In reply you are informed that the attention of the Board will be called to the matter at a meeting to be held within the next two weeks.

Very respectfully,
BAXTER T. SMELZER,
Secretary

CHITTENANGO, N. Y., September 23, 1899

BAXTER T. SMELZER, *Secretary State Board of Health*:

Dear Sir—Yours of September 11th was duly received, and in reply I would say that our local board have finally commenced to fix the ditch in accordance with their resolution, a copy of which I sent you. If they should fail in any particular I will notify you at once.

S. D. HANCHETT,
Health officer

ALBANY, *September 25, 1899*S. D. HANCHETT, *Health officer, Chittenango, N. Y.:*

Dear Sir—I am in receipt of your communication of the 23d inst. and am pleased to note your statement that the local authorities are about to abate a nuisance caused by an open ditch in your village as directed by this Board.

Very respectfully,

BAXTER T. SMELZER,

Secretary

COMPLAINT OF TOWN OF CLAY, CONCERNING DISPOSITION BEING MADE OF GARBAGE FROM CITY OF SYRACUSE

EUCLID, N. Y., *March 2, 1898*

BAXTER T. SMELZER, M. D.:

Dear Doctor—Inclosed you will find copies of the orders which have been served upon the city of Syracuse by this board, on account of the garbage dumped by that city on the bank of the Seneca river about two and one-half ($2\frac{1}{2}$) miles above the village of Belgium. Upon the receipt of the first notice the dumping was stopped in this town only to be carried on on the opposite side of the river, which is in the town of Lysander. The first order was obeyed, but the second was almost entirely disregarded. The drainage of the garbage left in the town of Lysander is into the river, and in case of high water a large amount of land will be overflowed by the river in Clay and much garbage will of necessity be carried into the stream.

Already I have observed two cases of typhoid fever in the village of Belgium which are directly traceable to drinking the water of the river below the dumps.

Believing the continuance of these uncared for garbage dumps to be a constant menace to the health of the people living along the river, that is in Belgium, Phoenix, Fulton and Oswego (many of whom use water from this stream), I would respectfully ask the State Board of Health to thoroughly investigate the matter.

Respectfully,

G. L. BROWN,
Health officer for Clay

[Copy]

To the City of Syracuse, County of Onondaga, State of New York:

We the undersigned members of the board of health of the town of Clay, county and state aforesaid, in accordance with an order served by this board upon the mayor, superintendent of public works and clerk of the board of health of the city of Syracuse, N. Y., on the 13th day of September, 1897, further order and direct that you cover all garbage dumped by the above named city or any agent or employee of the same within the limits of the aforesaid town, with quicklime at least two (2) inches deep, that this be covered with at least one foot of sound earth, also that a bank of earth at least six (6) feet thick and as high as the highest portion of the earth covering the garbage be so placed as to surround the whole dump. The whole work to be completed within the next thirty (30) days.

Dated this 4th day of October, 1897.

J. WESLEY SHEPARD, *Chairman*
SHERMAN S. WATERBURY, *Clerk*
ADONIRAM HART,
EVAN F. REESE,
ASEL J. MELVIN,
FRED W. GREEN,

Commissioners

[Copy]

We, the undersigned members of the board of health of the town of Clay, county of Onondaga, state of New York, convened this 11th day of September, 1897, on the farm of Edward Clay in the town, county and state aforesaid, do hereby order the dis-

continuance of the dumping of garbage of any nature within the limits of said town by the city of Syracuse or by any agent or employee of the same.

It is further ordered that all garbage already left upon the aforesaid farm of said Clay be put in a sanitary condition subject to the order and direction of this board.

Signed, J. WESLEY SHEPARD, *Chairman*
SHERMAN S. WATERBURY, *Clerk*
E. F. REESE,
F. W. GREEN,
ASEL J. MELVIN,
ADONIRAM HART,

Commissioners

ALBANY, *March 7, 1898*

C. L. BROWN, M. D., *Health officer Town of Clay, Euclid, N. Y.:*

Dear Sir—I am in receipt of your communication of the 2d inst. with copies of orders served on the authorities of the city of Syracuse by the board of health of the town of Clay, in the matter of the disposal of garbage from Syracuse in your town.

In reply, you are informed that the attention of Dr. F. W. Smith, a resident of Syracuse, and a member of this Board, has been called to your complaint.

Very respectfully,

BAXTER SMELZER,

Secretary

ALBANY, *March 7, 1898*

Dr. F. W. SMITH, *State Commissioner of Health, 700 South West street, Syracuse, N. Y.:*

Dear Sir—I enclose herewith for your information copy of a letter received from Dr. G. L. Brown, health officer town of Clay, also copies of orders of that board which have been served on the city of Syracuse on account of the garbage of that city being dumped in the town of Clay.

Very respectfully,

BAXTER SMELZER,

Secretary

SYRACUSE, N. Y., *March 31, 1898*

BAXTER T. SMELZER, M. D., *Secretary State Board of Health,*
Albany, N. Y.:

My Dear Doctor—In compliance with your instructions of March 7th, I have this day visited and examined the dump where the garbage of the city of Syracuse was deposited during the summer of 1897, against which complaint has been made by the health officer of the town of Clay.

This examination would have been made earlier had I not been informed that owing to the high water a thorough inspection would be impossible. I learned, however, on my visit that up to this time the dump had not been flooded by the usual spring rise of the river, and unless the water rises to a point very unusual after this season of the year there will be no cause to fear from flooding or washing of the dumps.

The dump in the town of Clay has been thoroughly and well covered with sufficient soil to prevent serious contamination of the atmosphere, and is sufficiently remote from habitation to preclude the possibility of any danger arising from it. The fact that the surface of the ground is higher at the river's bank than the dump itself prevents direct drainage from the dump into the river.

The dump on the Lysander side of the river, also complained of by the health officer of the town of Clay, I find in bad condition owing to the fact that it has not been properly covered with a sufficient amount of earth, and a large portion of the surface of the garbage deposited there has not been covered at all.

We think to remove the possible danger that may exist from the condition of this dump; it will only be necessary to cover this dump with about one foot of clean soil, plenty of which is to be had in the vicinity, and it is evident that the city of Syracuse, or the contractor having in charge the disposal of its garbage, should be required to promptly and thoroughly cover the dump.

Very respectfully,

F. W. SMITH

TOWN OF CAMILLUS

TOWN OF CAMILLUS, N. Y., April 15, 1898

To State Board of Health:

The proprietors of the Yates hotel, Averill & Gregory, of Syracuse, N. Y., maintain a farm about five miles from the city for a source of supply. This farm is situated in this town.

During previous seasons the kitchen refuse, etc., has been drawn to this farm, and dumped either upon the premises or at the side of the highway. Warm weather brought complaints from neighboring farmers as to the odor from this decomposing mass, which consisted of every variety of refuse imaginable in the way of animal, vegetable and fish from the table of this large hotel.

This firm endeavored to maintain a number of swine the first year upon this garbage. This proved a failure, and the next season an effort was made to burn it. This proving unsuccessful, it was allowed to accumulate here and there according to the directions given to the teamster driving the wagon.

As a result of the many complaints the board of health, at its regular annual meeting, was obliged to take some measures to abate the nuisance, and the following resolution was adopted, and the clerk instructed to give me a copy, which read as follows:

Resolved, That the health officer be instructed to notify Averill & Gregory, of Fairmount, to cease the dumping or burning of garbage on their premises or the highway in the town of Camillus.

This notice is to be served immediately, and as the firm have hitherto shown no disposition to heed the protests or notices served by former health officers, I write to get an idea as to just what legal steps will be supported by the local board and by the State Board in case of non-compliance.

Yours very truly,

FRED W. SLOCUM,

Health officer

ALBANY, April 16, 1898

DR. FRED W. SLOCUM, *Health officer, Camillus, N. Y.:*

Dear Sir—I am in receipt of your communication of the 15th inst., complaining of the disposition being made in the town of Camillus by Averill & Gregory of Syracuse, N. Y., of garbage and refuse from their hotel, the Yates house.

In reply you are informed that your complaint has been referred to Dr. F. W. Smith of Syracuse, N. Y., who is one of the commissioners of this Board.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, April 16, 1898

DR. FRED'K W. SMITH, *State Commissioner of Health, 700 South West street, Syracuse, N. Y.:*

Dear Sir—I enclose herewith for such action as you may desire to take, a complaint received from Dr. Fred W. Slocum, health officer of the town of Camillus, concerning the disposition being made in that town by the proprietors of the Yates house, Syracuse, N. Y., of garbage and other refuse from their hotel.

I have stated to Dr. Slocum that the matter has been referred to you.

Please return the complaint to me when you have finished with it.

Very respectfully,

BAXTER T. SMELZER,

Secretary

SYRACUSE, N. Y., April 26, 1898

DR. B. T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

My Dear Doctor—Regarding your communication of the 16th inst. enclosing a complaint from health officer Dr. F. W. Slocum, of the town of Camillus, regarding an alleged nuisance being maintained by Messrs. Averill & Gregory on their farm in said town by reason of their promiscuous dumping of garbage, swill

and refuse from the Yates hotel in the city of Syracuse, of which they are the proprietors, permit me to say that I have visited the farm in question and made a personal investigation, and find the facts as specified by Dr. Slocum in his communication and complaint to you.

I had a conference with Mr. Averill and Dr. Slocum yesterday afternoon, and have the promise of Mr. Averill to so take care of the garbage of the hotel in the future as to avoid any further cause for complaint. Pending their future action, I would advise that no action be taken by our department further than sending Dr. Slocum a copy of my letter, should you deem that necessary.

Yours respectfully,

F. W. SMITH

ALBANY, April 27, 1898

DR. F. W. SMITH, *State Commissioner of Health, 700 South West street, Syracuse, N. Y.:*

Dear Sir—I am in receipt of your communication of the 26th inst. reporting upon your investigation of the complaint made by Dr. F. W. Slocum, health officer of the town of Camillus, concerning an alleged nuisance on the premises of Averill & Gregory located in that town.

In reply you are informed that a copy of your report has been sent to Dr. Slocum.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, April 27, 1898

DR. F. W. SLOCUM, *Health officer of the Town of Camillus, Camillus, N. Y.:*

Dear Sir—I send you herewith enclosed copy of report of Dr. F. W. Smith upon his investigation of the complaint made by you concerning an alleged nuisance on the premises of Averill & Gregory in your town.

Very respectfully,

BAXTER T. SMELZER,

Secretary

VILLAGE OF ILION

To the Honorable the State Board of Health, Albany, N. Y.:

Whereas, a certain dumping ground exists on West Hill, so called, in the village of Ilion, county of Herkimer, and State of New York, and is used by said village of Ilion for a dumping ground; and

Whereas, the same annoys, injures and endangers the comfort, repose, health and safety of a considerable number of persons; and

Whereas, appeals to the local board of health have met with no notice or response; and

Whereas, said dumping ground is a public nuisance and sickness and it is believed at least one death from diphtheria can be traced to the existence of said nuisance; and

Whereas, reputable physicians condemn the same.

Now therefore, we, the undersigned, respectfully petition the State Board of Health of the State of New York to take cognizance of the existence of said nuisance, to use such steps toward the abatement of the same as may be just and proper and to take such further proceedings or action concerning the same as may be just and proper in the premises.

Elmer M. Cole, 25 Charles street.

Fred A. Bedworth, 21 Charles street.

B. F. Phillips, 27 Charles street.

C. E. Snell, 33 Charles street.

William A. Getman, 28 Charles street.

Robert J. Watson, 24 Charles street.

George E. Gough, 29 Charles street.

Wm. M. Avery, Charles street.

John C. Beebworth, Charles street.

J. W. Cole, 6 Charles street.

Frank E. Smith, 23 Charles street.

Chas. A. Barringer.

J. D. DeLong.

W. Tillinghast.

O. Moore, 17 Charles street.

C. B. Gough, 13 Charles street.

William H. Dornen, 9 Charles street.

D. J. Chesebrough, 7 Charles street.

H. J. Watson, 5 Charles street.

David Stitt, 3 Charles street.

William Hunter.

Charles Hunter.

Fillmore Bargler.

W. B. Secord.

F. A. Tuttle.

George Kohen, 25 South Fourth avenue.

L. N. Walker, 25 South Fourth avenue.

W. D. Beer, 15 South Fourth avenue.

W. T. Dodson, 15 South Fourth avenue.

C. M. Hilliard, 49 Fourth avenue, West Hill.

Mrs. Daniel Dygert, 27 South Fourth avenue.

Harry L. Fake, 27 South Fourth avenue.

Mrs. C. Horton, 13 South Fourth avenue.

H. N. Brand, 13 South Fourth avenue.

Mrs. Alice McMoners.

A. W. Worden, 7 South Fourth avenue.

C. A. Owston, 5 South Fourth avenue.

J. W. Kling.

G. Clive, Rand street.

D. E. Olds, 13 South Fifth avenue.

Frank O. Patterson, 83 Second street.

Joseph Parker.

Geo. E. Bates.

H. D. Hoyt.

W. J. King.

Frank Ostrander, 22 Prospect street.

F. H. Kellog, 80 Second street.

S. F. Nebhut, 75 Second street.

S. A. Penney, 22 Montgomery street.

Jas. Allstine, 13 Rand street.
Thos. J. Sill, 23 Third avenue.
J. R. Hamlen, 50 Second street.
Geo. Greenought.
F. W. Russell, 4 South Third avenue.
E. E. Day, 20 South Third avenue.
J. C. Day, 8 South Third avenue.
F. W. Archeler, 12 South Third avenue.
A. A. Rivers, South Third avenue.
Mrs. A. Jess, 18 South Third avenue.
A. Williamson, 24 South Third avenue.
G. H. Walrath, 27 South Third avenue.
Leo P. Hoffman, 25 South Third avenue.
Mrs. Loeffler, 23 South Third avenue.
A. C. Shepard.
H. M. Covert.
A. Palmer.
Fred H. Bennett.
John Griesmann.
B. Harrington.
Geo. Woodbury, 33 Second street.
Ellen Briggs, 33 Second street.
Chas. L. Fenton, 21 Second street.
W. E. McFarran, 4 Prospect avenue.
John Irlam.
C. N. Cole, 12 Prospect avenue.
F. O. Harter, 28 Third avenue.
T. V. Hollis, 6 Third avenue.
David H. Paddock.
E. M. Greene.
E. P. Clark.

ALBANY, *May* 24, 1898

ELMER M. COLE AND OTHERS, 25 *Charles street, Ilion, N. Y.*:

Gentlemen—I am in receipt of a petition signed by a number of residents of Ilion, complaining of an alleged nuisance caused by the use of land on West Hill as a dumping ground.

In reply you are informed that the attention of Dr. F. F. Comstock, health officer of Ilion, has been called to your complaint, and if upon receipt of his report it is deemed necessary, a representative of this Board will visit Ilion.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, *May 24, 1898*

F. F. COMSTOCK, M. D., *Health officer, Ilion, N. Y.:*

Dear Sir—This board is in receipt of a petition signed by some 90 persons, of which the following is a copy:

“Whereas a certain dumping ground exists on West Hill, so called, in the village of Ilion, County of Herkimer and State of New York, and is used by said village of Ilion for a dumping ground,

And whereas the same annoys, injures and endangers the comfort, repose, health and safety of a considerable number of persons,

And whereas appeals to the local board of health have met with no notice or response,

And whereas said dumping ground is a public nuisance and sickness and it is believed at least one death from diphtheria can be traced to the existence of said nuisance,

And whereas reputable physicians condemn the same,

Now therefore, we the undersigned respectfully petition the State Board of Health of the State of New York to take cognizance of the existence of said nuisance, to use such steps toward the abatement of the same as may be just and proper and to take such further proceedings or action concerning the same as may further be just and proper in the premises.”

It is requested that you investigate the complaint and report the result to this board, and if desired by you, a representative from this department will visit Ilion for the purpose of advising as to the means necessary in order to cause the abatement of any nuisance that may exist.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ILION, N. Y., May 25, 1898

BAXTER T. SMELZER, *Secretary State Board of Health:*

DEAR SIR—Yours of the 24th received this p. m. and am ready to report in regard to the "dump." Since writing you in regard to it some time ago, I have, as I had before in company with the local board, and as I wrote you, found it in good condition. Since then have had the president of the village inspect it and he reported to me that he had no complaint to make against the board, but instead thought they should be commended for keeping things in the condition they were. I am instructed by the local board to ask you at your earliest convenience to send a representative of your Board to inspect the premises, and if they are at fault they will take their medicine in good shape; but do not wish to be condemned upon the strength of a petition of croakers and kickers. Please let me know day and train upon which your inspector will come, and I will see he is met at the station and given every chance to satisfy himself in regard to the matter. Have forwarded to Prof. Tucker a sample of water for analysis, taken from the well from which water was used in the family in which the fatal case of diphtheria occurred. Will let you know the result when I receive the report of analysis. I think it no more than just that we should know the names attached to the petition sent you, and if too much trouble to send a copy, if you will send me the petition I will at once return it to you. There are several places we will show your representative when he visits us, among others, some owned by the village, unless they are changed before he arrives. In conclusion we deny every "whereas" excepting the first one, and are willing to leave the decision to your honorable Board. Hoping to hear from you very soon, I remain as ever.

Very truly yours,

F. F. COMSTOCK.

Sanitary regulations**DEPARTMENT OF THE BOARD OF HEALTH**

To the owners, agents or occupants of any house or lot in the village of Ilion:

You are hereby ordered to clean out all privy vaults, cess-pools and cellars and remove all heaps of rubbish containing any decaying animal or vegetable matter from your premises or places under your control, on or before the first of May, and as often thereafter as it becomes necessary. The sanitary inspectors will examine premises soon after May 1st.

HEALTH REGULATIONS

Pursuant to the provision of an act of the legislature of the state of New York, entitled "An act for the preservation of the public health," the board of health of the village of Ilion make and ordain the following sanitary regulations to take effect April 9, 1898:

NUISANCES DEFINED

§ 1 Whatever is dangerous to human life or health; whatever building or part of cellar thereof is overcrowded or not provided with adequate means of ingress and egress or is not sufficiently supported, ventilated, sewered, drained, lighted or cleaned, and whatever renders soil, air, water or food impure or unwholesome are declared to be nuisances and illegal; and every person having aided in creating or contributing to the same or who may support, continue or retain any of them shall be deemed guilty of a violation of this ordinance and shall also be liable for the expense of the abatement or remedy required.

PRIVIES, CESS-POOLS, ETC.

§ 2 No privy-pit, cess-pool, or reservoir into which any privy, water closet, stable, sink or other receptacle of refuse or sewage is drained, shall be constructed or maintained in any situation or in any manner whereby, through leakage or overflow of its con-

tents it may cause pollution of the soil near or about habitations, or of any well, spring or other source of water used for drinking or culinary purposes, nor shall the overflow from any such reservoir or receptacle permitted to discharge into any public place or in anywise whereby danger to health may be caused. All privies and cess-pools shall be cleaned out between the hours of 11 p. m. and 4 a. m., unless otherwise ordered by the board of health. All receptacles for conveyance of such matter shall be water-tight and closely covered. Violations of any of the provisions of this ordinance shall be punished by a fine of \$5 for each day's continuance of the nuisance after due notice to abate from an authorized officer.

SEWERS, DRAINS, ETC.

§ 3 All house sewers or drains for the conveyance of deleterious or offensive matters shall be water-tight, and the plans and methods of their construction shall be subject to the approval of the board of health. In streets or avenues where public sewers are or shall be constructed, the board of health may order house connection to be made therewith.

HOUSE REFUSE, GARBAGE, ETC.

§ 4 No house refuse, rubbish, offal, garbage, dead animals, decaying vegetable matter or organic waste substances of any kind, shall be thrown upon any street, road or public place and no putrid or decaying animal or vegetable matter shall be kept in any house, cellar or adjoining outbuilding for more than twenty-four hours. Every truckman who conveys any decaying vegetable matter, or organic waste substance of any kind to the public dumping ground must be provided with a shovel and bury or cover the same immediately. Violation of any of the provisions of this ordinance shall be punished by a fine of \$10.

FILLED IN, OR MADE LAND

§ 5 No sunken place shall be filled, nor made and constructed, with any material containing an admixture of putrescible animal or vegetable matter, under a penalty of not less than \$5 or more than \$10 for each cart load, or part thereof, of such material deposited.

NOXIOUS TRADES

§ 6 No person or company shall erect or maintain any manufactory or place of business dangerous to life or detrimental to health, or where unwholesome, offensive or deleterious odors, gas, smoke, deposit or exhalations are generated, without the permission of the board of health, and all such establishments shall be kept clean and wholesome so as not to be offensive or prejudicial to public health; nor shall any offensive or deleterious waste substance, gas-tar, sludge, refuse or injurious matter be allowed to accumulate on the premises or be thrown or allowed to run into any public waters, stream, water course, street or public place. And every person or company conducting such manufactory or business shall use the best approved and all reasonable means to prevent the escape of smoke, gases and odors, and to protect the health and safety of all operatives employed therein. Every hotel, lodging house, tenement house, work shop or other building where several persons are employed, factory, school, church, theatre, and every public building, shall be open to the inspection of the health officers and of the officers of the board of health. Any violation of the provisions of this ordinance shall be punishable by a fine of not less than \$10 nor more than \$100 for each offense.

UNWHOLESOME FOOD

§ 7 No meat, fish, bird, fruit or vegetables, milk, or anything for human food or drink, not being then fresh or properly preserved, sound, wholesome and safe for such use; nor any flesh of any animal which died by disease, or which was at the time of its death in a sickly or unwholesome condition; nor the carcass or meat of any calf which was at the time of its death less than four weeks old, or any lamb which was at the date of its death less than eight weeks old, or of any pig which was at the date of its death less than five weeks old, shall be brought within the limits of this village, or offered or held for sale as food therein. Any violation of any of the provisions of this ordinance shall be punishable by a fine of not less than \$25 and by the seizure and destruction of such unsound, unwholesome and immature food substances.

SLAUGHTER HOUSE, MARKET HOUSE, ETC.

§ 8 No person or persons without consent of the board of health shall build or use any slaughter house within the limits of this village, and the keeping and slaughtering of all cattle, sheep and swine, and the preparation and keeping of all meats, fish, birds or other animal food shall be in the manner best adapted to secure and continue their unwholesomeness as food; and every butcher or other person owning, leasing or occupying any place, room or building wherein any cattle, sheep or swine have been or are killed or dressed, and every person being the owner, lessee or occupant of any room or stable wherein any animals are kept, or of any market, public or private, shall cause such place, room, building, stable or market, and their yards and appurtenances to be thoroughly cleansed and purified, and all offal, blood, fat, garbage, refuse and unwholesome and offensive matter to be removed therefrom at least once in every 24 hours after the use thereof for any of the purposes herein referred to, and shall also at all times keep all woodwork, save floor and counters, in any building, place or premises shall be so constructed as to prevent blood or foul liquids or washings from settling in the earth beneath. Any violations of the provisions of this ordinance shall be punished by a fine of \$5 for each day's continuance or repetition of the offense.

NOTIFICATION OF INFECTIOUS DISEASES

§ 9 Every householder or head of family in a house wherein any case of infectious disease may occur shall report the same to the board of health or to the health officer within 12 hours from the time of his or her first knowledge of the nature of such disease; and until instructions are received from the said board or the health officer, shall not permit any clothing or other article which may have been exposed to infection to be removed from the house; nor shall any occupant change his residence elsewhere without the consent of the said board or health officer.

Every physician who may be called to attend a case of contagious or infectious disease shall as soon as he discovers the nature thereof make a written report specifying the name and residence of the patient, the nature thereof, and make any other facts relating thereto which he may deem important to the public health, and affix the date and sign his name thereto, and he shall hand such report to the householder or head of family as aforesaid, who shall thereupon become responsible for its transmission to the board of health within 12 hours, as above provided. The diseases to be thus promptly reported are: Malignant cholera, cerebro-spinal fever, small-pox, diphtheria, yellow fever, relapsing fever, scarlet fever, dysentery, typhus fever, typhoid fever, puerperal fever and measles. Any violation of any of the provisions of this ordinance shall be punishable by a fine of \$50.

IMPORTATION OF INFECTED PERSONS OR THINGS

§ 10 No persons or article liable to propagate a dangerous disease shall be brought within the limits of this village; and anyone having knowledge that such person or article has been brought within such limits shall immediately notify said board thereof. Any violation of any of the provisions of this ordinance shall be punished by a fine of not less than \$10 or more than \$50.

EXPOSURE OF INFECTED PERSONS OR THINGS

§ 11 No person shall, within the limits of this village, unless by a permit of the board of health, carry or remove from one building to another any patient affected with any contagious or infectious disease. Nor shall any person, by any exposure of any individual so affected, or of the body of such individual, or of any article capable of conveying contagion or infection, or by any negligent act connected with the care or custody thereof, or by a needless exposure of himself or herself, cause or contribute to the spread of disease from any such individual or dead body. Any violation of any of the provisions of this ordinance shall be punished by a fine of not less than \$5.

FUNERAL AFTER CONTAGIOUS DISEASES

§ 12 There shall not be a public or church funeral of any person who has died of Asiatic cholera, small-pox, typhus fever, diphtheria, scarlet fever or measles without the permit of the board of health therefor; and the family of the deceased shall in such cases limit the attendance to as few as possible, and take all precautions possible to prevent the exposure of other persons to contagion or infection. Any violation of any of the provisions of this ordinance shall be punished by a fine of not less than \$25.

INFECTIOUS DISEASES OF ANIMALS

§ 13. No animal infected with any infectious or contagious disease shall be brought within the limits of this village, and the bodies of animals dead of such disease or killed on account thereof, shall not be buried within 500 feet of any residence, nor disposed of otherwise than as the said board or its health officer shall direct. Any violation of any of the provisions of this ordinance shall be punished by a fine of not less than \$10.

No pigs or hogs shall be allowed kept within the corporation of the village of Ilion. Any violation of this provision shall be punished by a fine of not less than \$10.

REPORTS OF MARRIAGES AND BIRTHS

§ 14 It shall be the duty of the groom in every marriage and of the parents or custodian of every child born, and the physician or midwife who attended at the birth of such child, to make sure that the prescribed report of such marriage or birth is presented to the board of health or its registering officer within 30 days, under a penalty of \$5 for failure to do so, and for each ten days of continued neglect to present such report, after the expiration of the first 30 days, an additional penalty of \$2 shall be incurred.

CERTIFICATES OF DEATH AND BURIAL PERMITS

§ 15 Every undertaker or other person who may have charge of the funeral of a dead person shall procure a properly filled out certificate of the death and its probable cause, in accordance with

the form prescribed by the State Board of Health, and shall present the same to the designated officer or member of the board of health, and obtain a burial or transit permit thereupon at least 24 hours before the time appointed for such funeral, unless immediate burial is ordered by the board of health, and he shall not remove any dead body until such burial or transit permit shall have been procured. Any violation of any of the provisions of this ordinance shall be punished by a fine of not less than \$25.

SEXTONS, CEMETERY KEEPERS, ETC.

§ 16 Every person who acts as sexton, or undertaker, or cemetery keeper, within the limits of this village, or has the charge or care of any tomb, vault, burying ground or other place for the reception of the dead, where the bodies of any human beings are deposited, shall so conduct his business and so care for any such place above named, and to avoid detriment or danger to public health; and every person undertaking preparations for the burial of a dead body from contagious or infectious disease as hereinbefore enumerated shall adopt such precautions as the board of health may prescribe and to prevent the spread of such disease. Any violation of any of the provisions of this ordinance shall be punished by a fine of not less than \$10.

CORONERS' INQUEST

§ 17 Before the holding of any inquest within this village, the coroner who may intend to hold such inquest shall notify the board of health or the health officer of the place where the body is; what is reported to have been the cause, place and date of death, where the body has since been, when and where the proposed inquest is to held, and, if known, what physician attended the deceased person within 48 hours of such decease. And within 48 hours after the termination of such inquest such coroner shall cause to be transmitted to the board of health or to the health officer a certificate according to the form prescribed by the State Board of Health, supplying the data therein required to the best of his information and belief. Any violation of any of the provisions of this ordinance shall be punished by a fine of \$10.

DUTIES AND POWERS OF HEALTH OFFICERS

§ 18 The health officer is directed and empowered to execute and enforce all sanitary regulations of general obligation now or hereafter to be published by this board, also to enter upon or within any premises where conditions dangerous to the public health are known or believed to exist, and to examine into the nature of complaints made by any of the inhabitants concerning sources of danger or injury to health; and he shall preserve accurate records of his official actions and report the same to the board of health at its next meeting. And whenever, in his judgment, danger to the public health shall arise requiring special regulation not of general application, he shall forthwith notify the president of the board of health, who shall thereupon convene the board to take such action as may be necessary and proper.

PENALTIES

§ 19 Every person who wilfully violates or refuses to comply with, or who resists any ordinance, order, regulation or resolution of the board of health of this village, will be liable to arrest, action, penalty, fine and punishment provided and declared in chapter 25 of the Laws of 1893, of which notice must be taken.

INSTRUCTIONS FOR DISINFECTION

Disinfection is the destruction of the poisons of infectious and contagious diseases. Deodorizers, or substances which destroy smells, are not necessarily disinfectants, and disinfectants do not necessarily have an odor. Disinfection cannot compensate for want of cleanliness nor of ventilation.

*DISINFECTANTS TO BE EMPLOYED

1 Roll sulphur (brimstone) for fumigation. 2 Sulphate of iron (copperas) dissolved in water in the proportion of two pounds to the gallon, for soil, sewers, etc. 3 Sulphate of zinc and common salt dissolved together in water in the proportion of four ounces sulphate and two ounces of salt to the gallon for clothing.

* As prepared under the direction of the National Board of Health. Issued by the State Board of Health, New York

bed linen, etc. (4) Chloride of lime, best quality, four ounces, soft water one gallon. If good material is used this is one of the most reliable disinfectants and may be used for most purposes. All persons having grievances should make complaint to the health officer or secretary in writing with the signature attached.

G. M. CHESEBROUGH, *President*

JAMES BASTOW, *Secretary*

WM. H. VICKERMAN, *Inspector*

F. F. COMSTOCK, M. D., *Health officer
and registrar of vital statistics*

ILION, N. Y., May 25, 1898

To the State Board of Health:

Gentlemen.—We have a place known as a hotel, is of good size and every year is a continued source of trouble for the board. In case they are sure of winning, I have been instructed to notify the owner to remove the vault closets and connect with the sewer. Also was ordered to write and get your opinion of their power to do so. I send with this request a copy of the sanitary regulations as printed two weeks in two local weekly papers. Please let me know as soon as you can, as the place in question is a stumbling block in regard to other places. Hoping to hear from you at an early day I am,

Very truly yours,

F. F. COMSTOCK.

ALBANY, May 28, 1898

F. F. COMSTOCK, M. D., *Health officer, Ilion, N. Y.:*

Dear Sir.—I am in receipt of your communication of the 25th inst., reporting upon your investigation of a complaint sent to you from this department of the 24th inst.

Dr. Curtis of this Board will visit Ilion the early part of next week and will notify you when he will leave here.

Not having the time to copy names of petitioners signing complaint, I will have Dr. Curtis take the original with him to Ilion for your inspection.

Dr. Curtis will also advise you as to the course necessary for your board to take in the matter of causing the removal of vault closets, and requiring connections to be made with public sewer.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, June 3, 1898

To the Secretary of the State Board of Health:

A petition signed by citizens of Ilion to take cognizance of an alleged nuisance created by dumping garbage and household refuse at a point in the outskirts of the village, came to this office recently, which on reference to the local board of health met with a denial that there was a nuisance and a request, which has been complied with, that it be inspected from this office.

The household waste is collected by a few voluntary scavengers who are paid a small sum weekly by householders for its removal. It is hauled to a point well out into the country and dumped there under direction of the local health authority. This dumping place is the source of complaint.

A little ravine or abrupt depression of limited extent is the point assigned for the reception of this material; it is 10 to 15 feet in depth, contains no stagnant water and has a sparse growth of shrubbery. It is not less than one-third of a mile from the nearest dwelling and is remote from the highway. Garbage is dumped compactly over the edge of this ravine and by direction, ashes are made to cover it. There is now no decomposable material exposed; cans, shrubbery clippings, paper and such material only being in sight above and outside of the ashes. There is a smoldering fire and it gives off an offensive smoke; otherwise there is no odor escaping worthy of complaint. The fire should not be allowed to work into the mass and must be extinguished; combustible material should be separated and burned when a wind away from the village is blowing. If this is done and the garbage kept covered sufficiently there is no

reason why the dumping place may not be entirely sanitary. But this should be carefully seen to especially as warm weather comes on. There is no other available means of disposal to be commended except to plow the material under, or to cremate it. The annual yield of household waste from this village is probably about 500 tons if all were collected; it would be exceedingly desirable if attention were given to devising a crematory for villages of 5000 or 10,000 population that would operate with the same economy as for larger towns, but I know of none at present. It is not wise to use this readily putrescible matter to feed domestic animals which yield a food product, and it has no fertilizing value in its green state, for while it ferments quickly, it decomposes slowly in the soil.

The Ilion plan with suitable care is sufficiently satisfactory and as carried out, as I saw it, is not likely to cause defilement of either the atmosphere or any source of water-supply.

Respectfully,

F. C. CURTIS

DISPOSAL OF GARBAGE AT UTICA

ALBANY, *August 26, 1898*

To the State Board of Health:

The subject of this report is the disposition made of the household waste of Utica, which I have to-day looked into in answer to a request recently made for the action of this board upon it, by the health officer of that city, Dr. Wallace Clarke. The present method of garbage disposal has been condemned by the city board of health.

This material is being collected for the city by contract, the present contract price being \$6500 a year. The average amount is 12 two-horse loads daily, the loads being of about two tons each. This would amount to over 7000 tons per annum, which indicates pretty thorough collection from a population of 55,000.

The disposal of it consists in hauling it to a place in the outlying precincts, within the limits of the municipality, one and one half to two miles from the center of the city, where it is dumped on the open surface of the ground without further treatment. The right to thus deposit it is secured from the owner by a rental payment of \$1200 a year. The site is a large open flat meadow near the banks of the Mohawk river. In high water this ground is widely overflowed and much of the accumulated material is carried away by the stream. To day after a storm of exceptional severity it is so deeply under water that the whole meadow is an extensive morass and the dumping place nearer the river is inaccessible, although the site itself being more elevated is not entirely under water; it is therefore being deposited some distance less remotely than usual. The loads are found to consist of ordinary kitchen refuse in the customary state of semi-decomposition.

There is also brought and in like manner deposited here the contents of privy-vaults, which is brought in tightly closed barrels, averaging 12 to the load and of these loads I learned that under the energetic requirements of the board of health there are during the summer not less than 20 a day; but the material consists largely of water.

Related to its surroundings, this dumping site is remote from the nearest buildings, which are mostly factories along a street, a distance of possibly half a mile; in another direction and perhaps three-fourths of a mile distant is the large Masonic home; within that radius are other scattered dwellings; it is traversed by the main line of the New York Central Railroad. It is therefore fairly distant from permanent residents. On inquiry at the factories the workmen told me that when the wind was right the odor was very offensive and I also learned that frequently it reaches the Masonic home so that windows have to be kept closed.

The question whether a nuisance is thus being committed should I think be answered in the affirmative. To deposit this

great mass of decomposable organic waste from a population of 50,000 people without treatment of any sort upon such a site is not a method of its disposal that should be perpetuated. An important stream, which furnishes a potable supply for many people is being defiled not only by seepage into the soil but by the actual carrying away in bulk of much of the matter deposited. The air for a large area about it is defiled by exhalations from it as would be anticipated and as is found to be the case. To simply state the conditions as they exist is sufficient without elaboration of argument to show that a nuisance of menace and danger to the public health is being maintained, and in my opinion it should be adjudged as such.

The primitive methods of garbage disposal such as this or dumping it on the surface, or of ploughing it under or otherwise covering it, or of feeding it to animals whose product is used for human food should all be replaced by the modern methods of cremation or of utilization. In recent time these have been so perfected as to be sanitary and hardly more expensive than the long haul necessitated by the primitive methods. It is possible to place a cremator within city limits, of a sort now available, and consume this waste matter with no more offense arising than from the machinery of any ordinary factory. Utilization plants, which render this material in closed digesters by steam, also offer good results and in some of the larger cities are working satisfactorily.

My impression is that between these two methods, under either of which numerous plans are offered for selection, the choice as to cleanliness and sanitary working is in favor of cremation and as to expense of operation there is at this time perhaps little choice. In any case the cost of destruction is far less than that of collection of garbage and need add but a moderate item to the cost of its disposal, while substituting a wholesome method for one which as in the case in Utica is unsanitary and to be absolutely condemned.

Respectfully,

F. C. CURTIS

VILLAGE OF ONEIDA

ONEIDA, N. Y., *July 16, 1898*

To the Honorable the State Board of Health:

Gentlemen—The undersigned residents and taxpayers of the village of Oneida respectfully petition your honorable body to **abate** a nuisance in the Oneida village adjacent to a certain **canning** factory caused by the said canning company piling **tons** upon **tons** of *waste vines* from their factory in a heap, said vines causing unusual stench and odor this dry and sultry weather, causing sickness and also causing the attendance of physicians daily upon several cases. The local board of health has been appealed to, but in vain, and now we appeal to your honorable Board for relief.

Thomas E. Kennedy	Mrs. I. H. Lawton
Mrs. Anna Kennedy	I. H. Lawton
Frances Kennedy	J. C. Lawton
Grace Kennedy	A. C. Johnson
Mrs. M. T. Roberts	Louisa Johnson
John Lambert	William Hart
Thomas Morgan	Mrs. C. F. Arnold
Mrs. E. S. Ellis	Mrs. Louisa Beebee
Mr. E. S. Ellis	Wm. Bindjes
Mrs. John Lambert	Mrs. Martin Bindjes
Bertha Chamberlin	Miss Alice Brooke
F. McCraith	Mrs. Margaret Brooke
H. L. Chamberlin	Ulrica Cassill
John F. Morgan	Morris Wilson
A. H. Button	Mrs. M. Wilson
Mrs. Martin Carroll	Mrs. L. S. Skaelen
Mrs. M. Tillotson	J. W. Armstrong
Mrs. F. H. Jones	Henry Allen
Chas. Lawton	Jacob Walrath

ALBANY, *July 20, 1898*THOMAS E. KENNEDY, *Oneida, N. Y.:*

Dear Sir—I am in receipt of a letter signed by you and 37 other residents and taxpayers of the village of Oneida, in which complaint is made of a nuisance in said village caused by a canning company piling waste in a heap near its factory.

In reply, you are informed that a copy of your letter has been this day sent to Dr. E. R. Boden, health officer of your village, with instructions to investigate the conditions as stated in the complaint and to report upon the same to this department.

Very respectfully,

T. A. STUART,
*Assistant secretary*ALBANY, *July 20, 1898*E. R. BODEN, M. D., *Health officer Village of Oneida, Oneida, N. Y.:*

Dear Sir—I send you herewith enclosed copy of a letter signed by Thomas E. Kennedy and 37 other residents and taxpayers of the village of Oneida, in which complaint is made of a nuisance in said village caused by a canning company piling waste in a heap near its factory.

You are hereby instructed to investigate the conditions as stated in the complaint and to report upon the same to this department.

Very respectfully,

T. A. STUART,
*Assistant secretary*ONEIDA, N. Y., *July 22, 1898*T. A. STUART, *Assistant secretary:*

Yours received. Thomas Kennedy and 37 others have just cause for complaint, but advice from your Board will be most gladly welcomed. When Olney brothers started this pea factory it was "the contract" with farmers, bringing peas, to remove the vines. The farmers failed to do so and no complaint reached me till 1000 tons were there in a heap. Then I could not

find Olney till at least 2000 tons had accumulated. Olney was brought before our board. He agreed to enclose the same and put on lime. The enclosure has not been made; lime has been applied but with little or no effect. At least 2500 tons of pea vines are in that stack. To open up the stack now would, in my mind, "stink out the village" and if in its present state it is unhealthy it certainly would be more so if disturbed. It will take twenty teams thirty days to remove the vines—hence of the two evils, since no one but the farmers are to blame, I have chosen the latter. However, I await most anxiously a suggestion from your honorable body. If you place your arm in the stack as far as you can reach you will be unable to hold it there on account of the heat.

The odor is that of a "country swill barrel." The complainants, when the wind blows in their direction, are most woefully annoyed. I will act upon your suggestion with swift dispatch.

I have the honor to remain,

E. R. BODEN,
Oneida's health officer

ALBANY, N. Y., August 3, 1898

E. R. BODEN, M. D., *Health officer, Oneida, N. Y.:*

Dear Sir—Your report upon investigation of the complaint made by Thomas Kennedy and others was duly received, but the conditions stated by you were so peculiar that we have delayed replying, hoping to advise some means of temporarily abating the nuisance, until cold weather sets in, when the material could be removed.

Thinking that possibly the chemist of this Board could advise a disinfectant to be used, your letter was sent to him. His reply is as follows:

ALBANY, August 1, 1898

DR. B. T. SMELZER, *Secretary State Board of Health of New York.*
Albany:

Dear Sir—With reference to the communication of Dr. E. R. Boden, of Oneida, N. Y., referring to nuisance said to exist in that place caused by the decay of a large accumulation of pea vines, I

am of opinion that no "disinfectant" can be economically or satisfactorily employed to remedy the difficulty. From the statements made in Dr. Boden's letter it is evident that the mass is in a state of active fermentation and I do not think that any chemical agent could be applied to so large a quantity of material which would check the process of decay and destroy the offensive products of decomposition. Relief might be obtained by the use of some absorbent or deodorizer like charcoal or earth. With so large a mass the former would probably be too expensive and I can only suggest that the refuse be covered with clean earth if it cannot be removed and disposed of at once. It should never have been allowed to accumulate in such quantity, and it is evident that sooner or later it must be carried away and disposed of.

Very respectfully,

WILLIS G. TUCKER,

Director

As Olney brothers are maintaining a nuisance in violation of the public health law, your board should require them to cause its abatement at once, suggesting to them as recommended by Prof. Tucker, the covering of the mass of decaying vegetable matter with a sufficient quantity of clean earth, until such time as the whole mass can be removed.

In connection with this subject, it is considered that the business as conducted by Olney brothers can be properly classed under the head of "noxious trades" as defined by section 6 of enclosed sanitary regulations which it would be well for your board to adopt, having a fixed penalty for its violation.

The enforcement of the above regulation would prevent a repetition of the present nuisance, as it prohibits the accumulation of offensive or deleterious waste substances.

Very respectfully,

T. A. STUART,

Assistant secretary

VILLAGE OF OAKFIELD

Nuisance caused by manufacture of plaster of paris

OAKFIELD, N. Y., June 30, 1898

To the State Board of Health, Albany, N. Y.:

Gentlemen I wish to call your attention to a matter in this village of Oakfield. There is located in the south part of the village an establishment for the manufacture of calcined plaster—plaster of paris—on extensive scale. It is run 24 hours every day, and sometimes seven days in a week.

With the steam from the kettles there is a constant escape of partially calcined plaster, which is carried by the wind a distance of a fourth of a mile or more. It is an exceedingly fine dust or powder. It settles upon the houses, trees, plants, foliage, fruit and flowers. It is driven into the dwellings and can be swept out in measurable quantities. It is breathed into the lungs night and day by all who are within its reach. The plaster adheres to the fruit and it is eaten by the children and some adults. Careful people will not use the fruit unless it is carefully washed. When the wind is blowing stiffly it looks like a miniature snowstorm. Of course, a heavy rain will wash off the greater portion of the dust. I am satisfied that it is very seriously affecting the health and spirits of the people. I do not know just what its physical effects are, but it is exceedingly depressing to those who have to endure it. I know of one most estimable lady living near the works who can scarcely speak of the matter without shedding tears. My wife spends a part of the summers abroad, when she is quite well and strong. Immediately after her return she is worse, and at the very season when she would expect to be better. I think it will be difficult for her to live here at all if this trouble continues. There are

various other aspects of the case which might be mentioned. I enclose under another envelope some twigs which will give a fair sample of how it affects the foliage and fruit in the exposed places. A numerous signed petition to have the nuisance abated has been presented to the trustees of the village, but they claim, and probably they are correct, that they have no jurisdiction.

I have a daughter who has recently returned from school at Fredonia. Possibly she may have been exposed to the epidemic that has prevailed there, but I regard the small-pox trouble, which seems to have been easily stamped out, as of less importance than the one that I have attempted to describe. I would like the matter to be thoroughly investigated by your honorable Board.

In regard to my reliability, I will say that I am president of the board of education and am now, and have been for 30 years, clerk of the board of supervisors of this (Genesee) county.

Very truly yours,

BENJ. F. HAWES

ALBANY, *July 1, 1898*

BENJ. F. HAWES, *Oakfield, N. Y.:*

Dear Sir—We are in receipt of your communication of the 30th ultimo, also of the sample referred to in connection with your complaint concerning the manufacture of plaster of paris by an establishment located in the village of Oakfield.

In reply, you are informed that the state chemist has been directed to examine the sample sent by you, he to report the result to this Board.

Upon receipt of the report such action will be taken as is deemed to be necessary, of which you will be advised.

Very respectfully,

T. A. STUART,

Assistant secretary

ALBANY, *July 1, 1898***Prof. W. G. TUCKER, *Director of the State laboratory, Albany, N. Y.:***

Dear Sir—I enclose herewith copy of a letter received from Mr. Benj. F. Hawes, of Oakfield, N. Y., also under a separate cover the twigs referred to by Mr. Hawes in his complaint concerning an alleged nuisance caused by the manufacture of plaster of paris.

You are requested to make an examination of the dust on the twigs and state whether, in your judgment, it is detrimental to health.

Very respectfully,

T. A. STUART,

Assistant secretary

ALBANY, *July 12, 1898***A. F. ZORHORST, M. D., *Health officer, Oakfield, N. Y.:***

Dear Sir—I enclose herewith, copy of a complaint made by Mr. Benjamin F. Hawes of your village concerning an alleged nuisance caused by the manufacture of plaster of paris.

The twigs referred to by Mr. Hawes have been examined by the chemist of this Board, who reports as follows:

“Referring to your communication of the 1st inst. concerning an alleged nuisance caused by the manufacture of plaster of paris, and enclosing some leaves and twigs, dust coated, of which you direct an examination to be made, I would respectfully report that an examination of the latter shows that the foreign matter which, more or less completely covers the surface of the leaves, contains and essentially consists of sulphate of lime, or plaster of paris.

“I would say that this substance is not in itself poisonous, but that any such inert matter may become a nuisance if diffused in the air, or added, in any considerable quantity, to articles of food or drink, and under these circumstances may certainly be detrimental to health. It would appear to me that in such a case as this the reality and extent of the nuisance may best be determined by an actual inspection made by a competent health officer * * * .”

In view of the complaint made by Mr. Hawes, and the report of the state chemist upon his examination of the samples of twigs received, you are directed to examine into the complaint and report to this Board upon the reality and extent of the nuisance.

Very respectfully,

BAXTER T. SMELZER,

Secretary

OAKFIELD, N. Y., *July 25, 1898*

To the State Board of Health, Albany, N. Y.:

Gentlemen—In accordance with your directions, I have examined into the complaint made by Mr. Benjamin F. Hawes, of the corporate village of Oakfield, N. Y., concerning an alleged nuisance, caused by the manufacture of stucco or plaster of paris by the English stucco or plaster works, located in the southwest corner of the corporation of the village of Oakfield, N. Y., and find the complaint, as set forth by Mr. Hawes substantially correct.

The works, located as they are, in the southwest corner of the corporation, and the prevailing winds coming from the southwest and west continually carries a cloud of calcined lime over the south and southeast portion of the corporation, making everything white in its track, thereby annoying the inhabitants of that section of the village to such an extent as to threaten some of them with severe nervous trouble and sickness.

At certain times, more particularly during a dry spell, their lawns, shrubbery, walks, fruit and windows are white with the fine dust from the mill: and those living within 40 rods of the mill, cannot keep the dust out of their houses, which thereby necessitates an enormous amount of extra work, which with all does not prevent injury to their household goods. No one living within the track of the dust from the mills can use their rain-water for laundry or washing purposes, on account of the large amount of lime in the water, which has been washed from the house roof. The hardest well-water, softened with soda, is used by all in preference to their stuccoed rain-water.

Many of the properties could not be sold for anything near their cost value, which lay in the stucco dust district. Children cannot play on the lawns of the stucco dust district five minutes without their clothes becoming covered with the lime dust.

Yours very truly,

A. P. JACKSON,

Health officer

Oakfield, N. Y.

ALBANY, July 30, 1898

A. P. JACKSON, M. D., *Oakfield, N.Y.:*

Dear Sir—We are in receipt of your report upon an investigation made in connection with the complaint of Mr. Benjamin F. Hawes concerning a nuisance caused by the manufacture of plaster of paris.

From the report made by you, as well as from that of Prof. Tucker upon his examination of samples of twigs sent by Mr. Hawes, it would appear that a nuisance in violation of the Public health law as defined by section 6 of the enclosed sanitary regulations, is being maintained by the plaster works of your village.

It is recommended in view of the existing conditions, that your board notify the owners of the plaster works to appear before them to show cause why the nuisance should not be abated.

We find that Buck on Hygiene and Public Health refers to the dust from plaster burning as follows:

"Attempts have been made to catch the flying dust in wooden chambers built about the mills, but without success. The powder is so light and fine, that it is almost as difficult to confine as a gas. It is possible that something might be accomplished by having the air drawn continually from the room by a blower and forced into a long horizontal flue to a tall chimney. The heavier dust would settle in the flue, whence it could be removed as often as necessary, and a considerable portion of the lighter dust might be precipitated in the chimney by a spray of water. An ordinary spray condenser would be choked up too soon to

be of any use. Such arrangements as these proposed would probably be more expensive than the business warrants, and the only alternative seems to be to locate such mills and kilns in the country, and in places where nuisances would not be created."

While the opinion above expressed is not favorable to a satisfactory solution of the problem, the fact remains that a nuisance exists, and it is for the persons maintaining the nuisance to find out and put into effect such measures as will cause its abatement.

Very respectfully,

T. A. STUART,

Assistant secretary

VILLAGE OF TICONDEROGA

Water supply

TICONDEROGA, N. Y., November 1, 1898

To the Honorable the State Board of Health, Albany, N. Y.:

Gentlemen—This communication is to call attention to the abuses existing in Ticonderoga, N. Y., with reference to the quality of the water supply for its inhabitants, without calling special attention to the *sources* from which the water is taken, only to state that one of them is from the pond at the outlet of Lake George and the other from Chilson hill, the last of which is *particularly foul*. The writer hereof, having been for nearly eight years the superintendent of the Lake George system, found it absolutely necessary during the summer months, particularly, to open up all of the fire hydrants in the village and clean or flush out the pipes, at least *every two weeks*; this was always done on Saturday nights for two reasons: First so that it

would not so incommode water takers by muddying up the water, giving it time to settle; second, that under cover of night, water takers could not see the mud, slime and dirt that poured from these hydrants when so flushed out. The conditions have not at all *improved* since the times referred to, but upon the contrary are *very much worse* since the introduction of the Chilson hill water. The writer hereof complained to the health officer, Dr. G. H. Beers, that these hydrants had not been open or flushed out this *summer*, that it was a direct menace to the public health, etc. He promised to attend to the matter at once; weeks passed and nothing was done, then the writer went before the clerk of the board of health, who said that no complaint was entertained unless put in writing. This was at once done, this clerk took it to the president of the board of health, he, in turn did nothing and when seen about it said he would show it to the "president of the village;" that was some two or three months ago. In the meantime the foreman of the hose company complained to one of the health board that the hydrants ought to be opened, "as in case of fire the mud, etc., was liable to bust the hose," but nothing has ever been done in the matter and judging from what they say, nothing *will* be done; and the question is simply this, whether the State Board of Health should not and ought not to take this matter in hand and "see that the officers here do their duty." I also enclose a diagram of water pipes leading to the creek, the valve of which has not been opened for about *ten years*. The last time that it was opened by the writer, it ran mud for over one hour out into the middle of the creek. Some five or six years since, under other administration dead eels and muskrats came down through the pipe branching off to the mill of the Ti Pulp & Paper Company, stopping up and breaking their water meter, presumably "*all of these* did not go to that mill," and judging from the smell and taste of the water all did *not* so go. This summer particularly it is very foul, we have not dared to *drink* it and at times, by standing over night, the water smelled too rank to even *wash* in it. To all of these complaints made and urged upon the board of health, no action whatever has been taken. Could not all of these facts

be substantiated, no complaint would be thus made to your honorable body, which is now made, at the suggestion and request of other citizens other than the complainant.

Very respectfully yours,

E. A. PRESCOTT.

ALBANY, November 2, 1898

E. A. PRESCOTT, *Ticonderoga, N. Y.*:

Dear Sir—We are in receipt of your communication of the 1st inst. complaining of the quality of the water supplied to the village of Ticonderoga.

In reply you are informed that the attention of the health officer, Dr. G. H. Beers, has been called to your complaint with the request that a sample of water taken from the village supply be sent to this board for analysis.

Very respectfully,

T. A. STUART,

Assistant secretary

ALBANY, November 2, 1898

G. H. BEERS, M. D., *Health officer, Ticonderoga, N. Y.*:

Dear Sir—Complaint is made to this board by Mr. E. A. Prescott, that the water supplied to the village of Ticonderoga is impure and unwholesome. He further states that while complaint has been made to the local board of health concerning the matter, no action has been taken by them looking to a betterment of the conditions claimed to exist.

In view of the statement made by Mr. Prescott, it is suggested that a sample of the water be sent for analysis in accordance with enclosed instructions.

When the sample is sent, please notify this office in order that Prof. Tucker may be directed to proceed with the examination.

Very respectfully,

T. A. STUART,

Assistant secretary

P. S.—It is requested that you inform us whether the water is supplied by a private corporation or is the water supply controlled by the village authorities.

TICONDEROGA, N. Y., November 4, 1898

New York State Board of Health, Albany, N. Y.:

Gentlemen—Your request for samples of water supplied to this village, of which complaint has been made by E. A. Prescott, has been attended to and I express to Dr. Tucker to-day two samples taken from two sources of our water supply: one—sample No. 1, from residence of E. A. Prescott—is supplied from Lake George; and the other—sample No. 2—from pipes supplied by Chilson reservoir.

Mr. Prescott complains that the water supplied him at his residence tastes fishy and is *roily*, also that it smells badly. He claims that the pipe line from which his residence is supplied is a “dead line,” but our water commissioners say it is not so. I live next door to Mr. Prescott and am supplied from same *main* as he is but have found no cause for complaint.

We shall, however, be glad to know whether our water supply is contaminated or not and hope to hear from you soon as to the result of the analysis.

Yours truly,

G. H. BEERS, M. D.,

Health officer

P. S.—Water supplies are controlled by village authorities.

ALBANY, November 5, 1898

G. H. BEERS, M. D., *Health officer, Ticonderoga, N. Y.:*

Dear Sir—We are in receipt of your communication of the 4th inst. stating that two samples of water have been sent by you to Professor Tucker for analysis.

In reply you are informed that Professor Tucker has been directed to analyze the samples when received.

Upon receipt of his report a copy will be sent to you.

Very respectfully,

T. A. STUART,

Assistant secretary

ALBANY, November 5, 1898

Prof. W. G. TUCKER, *Director of State Board of Health Laboratory, Albany:*

Dear Sir—We are in receipt of information from Dr. G. H. Beers, Health officer of Ticonderoga, N. Y., that he has forwarded to you in compliance with instructions from this department, two samples of water.

Upon receipt of the samples you are directed to analyze the same, reporting the result to this Board.

Very respectfully,

T. A. STUART,

Assistant secretary

ALBANY, November 12, 1898

B. T. SMELZER, *Secretary State Board of Health of New York, Albany:*

Dear Sir—I respectfully enclose herewith reports upon the analyses of two samples of water received by your order on the 5th inst., from Dr. G. H. Beers, health officer, Ticonderoga, N. Y.

These waters are both of excellent quality, differing but slightly, No. 464 being in some respects somewhat the better, but both are of satisfactory quality.

Very respectfully,

WILLIS G. TUCKER.

Director

No. 464

STATE BOARD OF HEALTH OF NEW YORK

Analysis of potable water (results are parts in 100,000)

Received from Dr. G. H. Beers, health officer, Ticonderoga, N. Y.; date received, November 5, 1898; source, Lake George water from pipes at residence of E. A. Prescott, Ticonderoga, N. Y.; how labelled, "No. 1." Appearance: Color, light greenish tint; turbidity, very slight; sediment, trifling; odor at 100 degrees F., none; chlorine in chlorides, 0.10; free ammonia,

0.0017; albuminoid ammonia, 0.0030; nitrites, none; total solids, 9.80; loss on ignition, 2.60; behavior during ignition, darkened very slightly; mineral matter, 7.20; remarks, good quality.

WILLIS G. TUCKER,

Director

Dated at State Board of Health laboratory, Albany, N. Y.,
November 12, 1898.

No. 465

STATE BOARD OF HEALTH OF NEW YORK

Analysis of potable water (results are parts in 100,000)

Received from Dr. G. H. Beers, health officer, Ticonderoga, N. Y.; date received, November 5, 1898; source, "Chilson reservoir, drawn from pipes in village;" how labelled, "No. 2." Appearance: Color, greenish tint; turbidity, very slight; sediment, very slight; odor at 100 degrees F., none; chlorine in chlorides, 0.10; free ammonia, 0.0020; albuminoid ammonia, 0.0040; nitrites, none; total solids, 11.40; loss on ignition, 4.20; behavior during ignition, darkened slightly; mineral matter, 7.20; remarks, good quality.

WILLIS G. TUCKER,

Director

Dated at State Board of Health laboratory, Albany, N. Y.,
November 12, 1898.

SMALL-POX AT MOUNT MORRIS

ALBANY, August 31, 1898

To the Secretary of the State Board of Health:

Sir -After visiting Mount Morris to-day to make inquiry regarding the existence there of small-pox, I have to report that I found there one case of modified variola in the eighth day of

sickness. I also found a number of persons, mostly adults, who showed the stains and superficial scars of the disease, but who had passed by the condition of active sickness.

The symptoms present in the case I saw and I think likewise, though perhaps to a less intense degree, with all of the others, were similar to those found generally characterizing the cases in other places in the central part of the state, all of which, as those of Mount Morris, are traceable to the same origin—that is to the member of the traveling troupe who imported the disease into this state in May last. It is a matter of scientific interest to note the uniform adherence of the cases coming under our observation to the type of the original case.

Briefly repeated, these symptoms have been, with the exception of a few persons, who had the disease in moderately severe form, a remarkably mild sickness and a tendency to abort early, some hardly reaching the pustular stage. For example, in the case of to-day the patient, a man in middle age, began to feel ill on the 16th, quitting his work that afternoon. A fever developed with a temperature of 104 degrees, and it lasted through three days. Then an eruption began to appear on the face and back of the hands, with which the fever markedly fell and malaise disappeared. The early eruption was dry, papular. To-day, the eighth or ninth of illness, his forehead, cheeks and chin are covered pretty thickly with discrete lesions which are mostly papulo-pustular; in some few the fluid is a turbid lactescent vesicular material; some are only papules hard, firm, and there is well-marked induration of the base of all the lesions. The hands and wrists have more sparse eruption and mostly papular. On the body there are very few lesions, they are less defined and the fluid in the lesions is more lactescent than pustular. He has little fever, is sitting up and entirely able to help himself.

The fever of the grade and duration is always present and in most cases subsides with appearance of the eruption; the eruption is papular always, at least on the face and hands, though papulation may be but slightly marked on the body, where usu-

ally there is very little eruption. A prolonged stain with some cicatrix marks the site of lesions in those who have passed through the disease. The case described is more severe, more characteristic of variola, than some of the cases occurring in this outbreak, and a most remarkable fact has been that this mildness of the disease has occurred in persons giving no evidence of having ever been vaccinated.

As might be anticipated, the variolous character of this disease has in several places not been recognized, and such was the case at Mount Morris. It is good evidence of the protective value of vaccination to the population that the majority of medical practitioners have at very remote intervals or never seen a case of small-pox. No doubt the outbreak in this locality followed the appearance of the infected traveling troupe here May 2d last, and there have been since a sequence of cases. These were so mild that one family that I saw, where five or six adults were sick and at least one of them has his face covered with well-defined stains and cicatrices seven weeks after the onset, did not call in a physician.

But that the disease is variola is certain, because it is a contagious exanthem of the same type as that observed in the other localities, where mingled with mild cases some well-marked of variola have occurred, and it has these variolous characteristics: The subjects are adults, it has a severe initial fever lasting three full days, subsiding with the appearance of the eruption; the type lesion is a papule and not a vesicle; it affects first and most the face, hands and forearms, not developing much on the body; the lesions, although aborting early, many of them leave scars, and the course is one of not less than three weeks generally. The disease is not to be admitted as varicella, as there has been a tendency to consider it, and it certainly is variola.

After consulting with the health officers of Mount Morris, village and town, and with the physicians, the nature of the disease was agreed upon and the customary precautions outlined and to be carried out energetically.

Respectfully,

F. C. CURTIS

VILLAGE OF CAMDEN

Typhoid Fever

CAMDEN, N. Y., *September 27, 1898*

DR. BAXTER T. SMELZER, *Albany, N. Y.:*

My Dear Doctor—At the present time we are having quite a prevalence of typhoid fever in our village and for several years we have had more than we should have. The board has instructed me to communicate with your Board and see if you can send us a man who can investigate the cause of the trouble.

The local board desire to make a thorough investigation and with that end in view have authorized me to secure a man with the following qualifications: First, a physician; second, a bacteriologist, and third, a man who has had experience in investigating the source of typhoid fever. If you have such a man in the employ of your Board or can secure one, you may send him to me at once.

Kindly advise me at the earliest moment as to whether we may look for a man from your Board.

Yours truly,

H. L. BORLAND,

Health officer

ALBANY, *September 29, 1898*

H. L. BORLAND, M. D., *Health officer, Camden, N. Y.:*

Dear Sir—I am in receipt of your communication of the 27th inst., requesting the services of an expert from this Board to investigate as to the source of typhoid fever, which is now quite prevalent in your village.

In reply you are informed that Dr. F. C. Curtis, the medical expert of this department will be sent to Camden in compliance with your request.

As the doctor is now out of the city on official business, it may be a week before he will be able to visit your village. Upon his return he will inform you when it will be convenient for him to make the desired investigation, which will be at the expense of your municipality.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, October 6, 1898

Dr. H. L. BORLAND, *Health officer, Camden, N. Y.:*

Dear Doctor—As the result of my visit to Camden yesterday in company with you I find that since the first of August there have been 15 cases of typhoid fever in Camden, that they have been distributed over that period of time, and that they have been distributed without any order of occurrence over the entire village. This indicates that the cause is not a central focus of infection, but that it is one that has been operative throughout that period and of general application throughout the village. That is to say the cause is not a temporarily acting thing reaching all its subjects about one time, such as for instance infected oysters or some such food eaten uncooked; nor is it a local acting thing such as we might have in an infected well which would operate upon the immediate neighborhood using it and not on the entire village.

The cause must be something which operates continuously and is wide-reaching. We know it must also be something which reaches its subjects through the stomach, and taken into it as drink or food which has become infected with the typhoid germ, the vitality of which has not been destroyed by cooking. The range of these causes is limited for there are few things taken into the system without cooking. Infected water is the chief thing causing typhoid fever, milk occasionally, not often, causing it because the chances for its infection are limited; other articles of food which are eaten uncooked but seldom, and not here because manifestly such a cause could hardly operate extensively and continuously. Sewer air, even if ever a cause, could not operate here for you have no sewers.

As to the water, you have two sources of public water supply, one of which is extensively used, the other taken by only thirty or forty families. The main supply has a watershed as described to me free from reasonable chance for infection, and I should think the same might be said of the other supply.

A considerable number of wells exist in the village and these I should regard with much more suspicion, for in a place which like Camden has had habitually for years a number of cases of typhoid fever in the fall, it is almost certain that its germs become planted in the soil there and are likely to reach the wells. We have frequent proof of this, and weather conditions may favor the infection of wells all over a village at once, of which we also have proof. Wells in such soil are easily contaminated —

Then further, ice taken from an infected source may contain typhoid germs and so cause the disease. Ice is but partially freed from the germs in water it is made from. The ice largely used in Camden is taken from a sewage-infected mill pond and I should not consider it safe ice to put into water to drink. The pond is sewered into and the bottom now exposed has a great deal of silt and apparent organic matter which is carried or thrown into it.

Of the 23 families which have had typhoid fever since January of this year, 14 habitually used water from the public supply, six from wells and the supply of two or three is not stated. It is not known how many use the pond ice, but the disease not appearing in early summer would apparently release it from immediate suspicion.

Milk is furnished to the village by a number of dealers, and of the 23 families, 18 have been supplied from one source and possibly others take it in part. We visited this dairy and found no typhoid fever now prevalent among those handling the milk or utensils, and the premises and methods are cleanly. Milk-spread epidemics are usually fulminant and directly traceable to infection of the milk or milk cans by persons having to do with those sick with typhoid fever. Nothing of this sort was found. We did find that a child sometime ago was sick, and

possibly with typhoid fever, in this house, and there is a good chance that some of the germs from it may have found their way into the soil where slops are to some extent deposited outside the kitchen door and near to a cistern, the water of which is used for washing milk cans. These germs deposited in soil will live for an indefinite length of time, and it is possible that being in this soil they might find their way through the walls of a cistern. It is quite possible, too, that the flies gathering thickly about infected material might carry infection to the milk cans which are washed near by. We will have some of this soil and the water from this cistern tested biologically. Meantime, inasmuch as the circumstances point so much toward this possible source of common infection, I would recommend that the soil which has received slops be excavated fully to the depth of the bottom of the cistern, that disinfectants be applied and that it be filled in with fresh earth; also that the cistern be emptied and cleaned, and that a drain be put in to carry away kitchen slops to a safe distance. Tests might be applied to prove that water from this soil really reaches the cistern, but under the circumstances I would not await their application, for the remedy is simple and I think justifiable. There is apparently no other means by which this milk could be in any way responsible for this outbreak.

Biological tests should be made also of the public water supplies and also of the wells.

I would suggest that a sewer system should be planned for the village, that the use of village wells be discouraged, and that a better source of ice supply for family use be sought for. Typhoid fever has an established footing in Camden, for I note that you have a number of cases every year, in the fall and early spring, about ten cases in the year, which is excessive. These are remedies for it, assuming that the public water supplies are beyond suspicion.

Very truly yours,
F. C. CURTIS

Dr. BAXTER T. SMELZER, *Albany, N. Y.*:

Dear Doctor—Dr. Blummer has reported to you the result of the water examination for our local board. I will now give you the key.

Sample A—Taken from Emmons' brook, just below Wm. Smith's farm.

Sample B—Taken from Emmons' brook, just below Lafferty bridge.

Sample C—Taken from H. W. Sanford's cistern.

Sample D—Taken from water drawn from service pipes in four different quarters of the village.

Sample E—Taken from Mt. Parnassus spring water.

The rough sketch I send herewith will explain the location from which the samples A and B were taken. The Mt. Parnassus spring water is an entirely different supply from that sketched.

William Smith's farm is the place where the cleanings from the privy vaults have been hauled and used as fertilizer for many years. The rear end of this farm as you will see from the sketch drains directly into Emmons' brook. It would appear from the topography of the ground and examination of water that we are getting a certain amount of drainage from the Smith farm in our public water supply.

The local board would like to have you send Dr. Curtis here again at the earliest convenience, while the ground is yet free from snow so that we may know what we can do under the circumstances.

Yours very truly,

H. L. BORLAND,

Health officer

November 26, 1898

H. L. BORLAND, M. D., *Health officer, Camden, N. Y.*:

Dear Doctor—I don't doubt the ground in Camden is covered with snow and it would hardly be worth while for me to come there now to see the condition you describe. I suppose it is from Emmons' brook that water is taken in part for your chief water supply.

I did not go to look at this source of supply and its water shed, as I got the impression that there was no question as to its probably reasonable freedom from pollution. But it is very evident from your description, that the water is exposed to defilement by the use of vault cleanings on the Smith farm. You do not mention how near the water this material is disposed, but your sketch indicates that it is quite near. Certainly this should not be allowed. Finding evidence of fecal matter in the water on analysis is no more than would be expected. Your board of health should take steps to stop this. Perhaps you can do this yourselves, but you can if necessary do it through the formulating of rules and regulations for the protection of your water supply by the State Board of Health, which would involve more expense. No human excreta should be deposited within 250 feet of the stream from which you take water.

You can find examples of regulations adopted for certain supplies in the 17th annual report of this Board.

Samples D and E to which you refer, there is no laboratory report upon; did you send them?

I note that the cistern water shows impurity also; did you secure action by Mr. Sanford to make this water clean?

How much typhoid fever do you continue to have?

Yours truly,

F. C. CURTIS

ALBANY, N. Y., December 1, 1898

To the Board of Health of Camden, Dr. H. L. BORLAND, Health officer:

Dear Sirs—After going over the water shed of Emmons' brook and the sources of your main water supply, I would report finding the *natural* conditions such that you should have good water. The brook runs through much of its course above the reservoir, with a rapid fall in a sparsely wooded ravine, and has very little cultivatable land near it. The area of water shed is very limited, and but for the springs with which the region abounds the flow would not be constant. The sources of the springs cannot all be traced, and

some probably contribute to it which are far enough away to be in proximity to cultivated land and homesteads. This is a possible source of contamination. The topography of the land there is also such that abrupt hillsides form occasional courses down which severe rains form currents of surface water. This is notably the case on one farm, Mr. Smith's, where night soil taken from the village is composted and used as a fertilizer. A corn field so treated last summer was in the line of contributing to such a current, which by a short course ran direct to the brook.

As the laboratory analysis of water taken from the brook just below this point showed the presence of bacilli or germs that occur only in fecal matter it appears probable that here was a definite source of contamination. If intestinal bacteria reached the water we well know that typhoid germs, which are intestinal, would if present also enter the water. We also know that these germs deposited in soil remain there, living and growing, for an indefinite length of time. So it is fair to infer that all things considered here was a source of infection of the brook.

The springs which find in this brook their natural outlet might also bring from their source, possibly near habitations and sources of pollution, undesirable additions to the water. I cannot otherwise account for the results of laboratory examination. The number of dwellings on this small water shed are however few and it may be possible in the summer time to locate any springs near to them.

There is a little but constant stream, spring-fed, which runs beside the road and under Mr. Lafferty's barn and soon after into the brook. This is one of the spring streams which is now visible and to be remedied.

I would recommend:

- 1 That the removal of night soil from Camden be controlled so that none of it can be taken for use on land above the reservoir. I would at least prevent its use on land that slopes towards possible tributaries of the brook, but it would be better to keep it off the entire region, because of the chance of infecting a tributary spring. I suggested to Dr. Borland ways by which your municipality can control this.

2 That the streamlet which flows under the Lafferty barn be diverted so as not to go near it, and back to the rear of the lot on which it stands.

I am not in possession of facts to make a definite recommendation regarding other springs and their effluents, but it seems to me that it would be wise to search this small water shed in detail for them and any possible source of their defilement, and removal thereof.

3 Emmons' brook flows rapidly through most of its course, but where obstructions impede much light silt, no doubt of vegetable matter, collects readily on the bottom. It would be wise to clear it of obstruction which to some degree exists.

In addition to the brook, water is collected from some springs and runs directly to the main below the reservoir. These are so located in a secluded place far from habitations as to be free from apparently any chance of contamination, and if still larger use were made of this available source no doubt the main would be so filled as to maintain a pressure equal to that now had from the reservoir. However, I do not see why the brook cannot be made a pure source, and the general use of this water ought to supplant all village wells, most of which in the loose soil of that locality stand good chance of contamination.

Very respectfully,

F. C. CURTIS

CITY OF LOCKPORT

Water Supply

LOCKPORT, *February 8, 1898*

To the State Board of Health:

Unless you exert your authority and stop the condition of things existing in Lockport, half the city will be down with typhoid fever before spring. There have been six deaths from it during the past 24 hours, and it is said there are 150 cases in the city. This trouble is all due to the emptying of several sewers into the canal above the intake pipe of the city water works. The board of health and common council take no action in the matter.

Yours truly,
TAXPAYER

ALBANY, *February 11, 1898*

CHAMPLIN F. BUCK, *Health officer, Lockport, N. Y.:*

Dear Sir.—I enclose herewith a copy of an anonymous communication calling attention to certain alleged unsanitary conditions in your city, and desire to state that while it is the policy of this department to ignore anonymous complaints, the statements made in this letter warrant my submitting it to you for investigation.

It is requested that you inform this department whether or not some 150 cases of typhoid fever exists in your city as stated, and if a number of cases of the disease do exist, whether they can be attributed to the cause given in the complaint.

Very respectfully,

BAXTER T. SMELZER,

Secretary

LOCKPORT, February 14, 1898

BAXTER T. SMELZER, M. D., Albany, N. Y.:

Dear Sir.—Your letter of the 11th inst. at hand. There are and have been for the past month quite a number of cases of *fever* in this city, but when anyone says that there are 150 cases of *typhoid fever*, I should like to have him prove it, or at any rate sign his name to his communication.

Since receiving your letter I have interviewed 18 physicians in the city and this number will include almost all, and from their report there are 45 cases of typhoid fever at present. I think, however, that 50 would be nearer correct, as some of the doctors say that they get well in two or three weeks. There are some malarial cases which may be confounded with typhoid, and I think some of these have been reported as typhoid.

Six physicians have no cases; five physicians have two cases; two physicians have three cases; one physician has six cases; two physicians have seven cases; one physician has 11 cases; one physician has 16 cases; total, 45 cases.

With regard to cause, *well water* is the cause attributed by most who give any cause. No cause or don't know is the answer given by some. The open winter and unsettled state of the weather is also probably the best reason given. One case is attributed to milk from a cow which had been watered with the city water. I cannot bring myself to believe that milk can be infected in this manner, but I understand that on this point authorities differ.

There were several cases of typhoid fever a year ago and yet there was no excitement. Our water supply then was in awful shape owing to the enlarging of the canal, but this year we are in better shape, but everything is not as it should be, nor as we want it, but neither the board of health nor the common council have as yet been able to determine the best manner of improving it. There are several plans under consideration.

These reports have been exaggerated as my figures plainly show, and with the exception of the cow case, no case is attributed

LOCKPORT, N. Y., *March 3, 1898*

BAKTER T. SMELZER, M. D., *Secretary State Board of Health,
Albany, N. Y.:*

Dear Sir—Your communication of March 3d at hand and contents noted.

With regard to your letter of February 14th, would say that I had your letter with me at the last meeting of the board of health, but as there was no quorum present, I could not bring it up for action. I had a talk regarding it, however, with the mayor and he feels concerning the alleged scare as I do. We have no more epidemic of typhoid fever here than they have in Buffalo, Tonawanda or Niagara Falls. Rumor and some officious person who did not dare sign his name has started the story that we have such a quantity of typhoid fever here that it is epidemic. This you will find denied by most of the best physicians here; but some, as you know, always want to make things look worse than they really are, and this I think accounts for the large number some of the doctors reported. The open winter which we have had has had more to do with the fevers than anything else, for the cases of fever are not limited to any section of the city, nor to any class of individuals, but are widely separated and scattered.

The water supply in the city mains is used for fire and sanitary purposes only, for no one would think of drinking it. A large proportion of the people use filtered rain water for drinking purposes.

Regarding the wells they were examined and the water analyzed about two years ago and found to be in good condition.

My duties as health officer and city physician for the past month have been such that I have done over three times the amount of work for which the salary pays, and I do not feel called upon to add to all this work the inspection and examination of the wells of the city, near which every so-called case of typhoid fever exists unless extra remuneration is made to me therefor. Our city water is 100 per cent better than it was a year ago, yet this is the year the busy-bodies howl.

We should have a large quantity of lime sent here to Lockport to put on the excavated mud taken from the bottom of the Erie canal and dumped in East Lockport within the city limits. This mud is taken from a part of the canal where a great deal has been thrown in past years and back of buildings where people have lived, and undoubtedly when warm weather comes will develop decomposition and a stench will arise. As to the quantity needed, I cannot say at present.

Awaiting your further pleasure.

Respectfully,

CHAMPLIN FLETCHER BUCK,

Health officer

ALBANY, March 7, 1898

HON. CHARLES PETERSON, *Mayor of the City of Lockport, Lockport, N. Y.:*

Dear Sir—On February 10th this Board received information that there was an epidemic of typhoid fever in your city, it being claimed that there were some 150 cases at that time.

Upon receipt of the information the attention of Dr. Champlin Fletcher Buck, the health officer of your city, was called to the complaint, who in reply stated that he had interviewed some 17 physicians who had acknowledged some 50 cases of typhoid fever among their patients.

In view of the above statement, and of the duty imposed upon this Board of the Public health law requiring it to make inquiries in respect to the cause of disease, especially epidemics, Dr. Buck was requested under date of February 14, 1898, to make certain investigations either in person or through some competent person under his instructions, to ascertain if possible, the cause of the epidemic.

Dr. Buck, under date of March 3, 1898, replies as follows:

" * * * With regard to your letter of February 14th, would say that I had your letter with me at the last meeting of the board of health, but as there was no quorum present, I could not bring

it up for action. I had a talk regarding it, however, with the mayor, and he feels concerning the alleged scare as I do. We have no more epidemic of typhoid fever here than they have in Buffalo, Tonawanda or Niagara Falls."

Dr. Buck further states: "My duties as health officer and city physician for the past month have been such that I have done over three times the amount of work for which the salary pays, and I do not feel called upon to add to all this work the inspection and examination of the wells of the city near which every so-called case of typhoid fever exists, unless extra remuneration is made to me therefor."

As Dr. Buck acknowledges that there are at least 50 cases of typhoid fever in the city of Lockport against 45 as reported by the different physicians, either number being far in excess of what they should be under proper sanitary conditions, you are requested as mayor of the city and president of the board of health to order the investigation as to the cause of typhoid fever as outlined in our letter to Dr. Buck, under date of February 16, 1898.

If this Board can be of any assistance to you in the matter, either in the examination of samples of water, or through the services of one of its sanitary engineers it will be pleased to comply with any request you may make in the matter.

Very respectfully,

BAXTER T. SMELZER,

Secretary

LOCKPORT, N. Y., *March 18, 1898*

BAXTER T. SMELZER, M. D., *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—I have gathered, according to directions, samples from seven (7) wells and one (1) spring in this city and expect to be able to ship them to the Bender hygienic laboratory to-day. Each sample is numbered according to the enclosed description. The reasons for sending these samples is that they were decided on by the local board of health at a special meeting.

No. 1. Earles well, back of house, 18 to 20 feet deep, about 75 feet from nearest closet. Dug down to rock and then blasted. Used by neighborhood.

No. 2. Eastons well, under house. Dug 16 feet and then drilled 40 feet through rock to gravel, about 50 feet from barn and about the same distance from privy vault on next lot. Some of the neighbors come there for water.

No. 3. Cave street well, on side of street, about 20 feet from a house and 75 feet from a vault, 50 feet from a barn. Sewer in street and receiver on each side of well. Depth and through what unknown. Not much used.

No. 4. Chestnut and McCollum street well, on street corner, 28½ feet deep to gravel, through rock. 20 feet from nearest house, 100 feet from privy. 40 to 100 families use this water.

No. 5. Chestnut and Charles street well, on street corner. Said to be 60 feet deep, a receiver connecting with sewer in front of it, 50 feet from a house, over 100 feet from barn or privy. Water used extensively by neighbors, and also in mills at quite a distance.

No. 6. Spalding spring, source unknown, used by a large number of people.

No. 7. Church and Grosvenor street well, on street corner, 80 feet deep through rock, 40 feet from nearest house, 120 feet from privy. Used by every one in the vicinity.

No. 8. Dr. Bristol's well, between two houses, 25 feet deep, through rock to gravel, 50 feet from privy, 70 feet from barn. Everyone in the neighborhood comes here for water.

Awaiting their report and your further pleasure.

Respectfully yours,

CHAMPLIN FLETCHER BUCK.

Health Officer

ALBANY, N. Y., March 19, 1898

CHAMPLIN FLETCHER BUCK, M. D., *Health officer, Lockport, N. Y.:*

Dear Sir—I am in receipt of your communication of the 18th inst., stating that eight samples of water would be sent by you to the Bender hygienic laboratory of this city, for examination.

In reply you are informed that the laboratory authorities have been requested to make bacteriological examinations of the water when received.

Upon receipt of the report a copy will be forwarded to you.

Very respectfully,

BAXTER T. SMELZER,

Secretary

BENDER HYGIENIC LABORATORY,

ALBANY, N. Y., March 29, 1898

Dr. BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—Enclosed find the report on the examination of the water from Lockport, N. Y., recently submitted to us.

Water No. 1. Number of colonies to the cubic centimeter 854. Theobald Smith's test. Of nine tubes inoculated none give gas. From the gelatin plates were isolated a number of water saprophytes, and two colonies of a liquefying organism, which was present in all the samples but was not identified.

Water No. 2. Number of colonies to the cubic centimeter 976. Theobald Smith's test. Out of nine tubes three give gas between 30 and 75 per cent. From the plates were isolated the liquefying organism mentioned above, the *Bacillus coli communis* and the *B. subtilis*.

Water No. 3. Number of organism to the cubic centimeter 1230. Theobald Smith's test. Out of nine tubes one gives a trace of gas. From the plates was isolated only the unknown liquefier mentioned above.

Water No. 4. Number of colonies per cubic centimeter 475. Theobald Smith's test. Out of eight tubes one gives about 25 per cent gas. From the plates were isolated the *Proteus vulgaris*, and the unknown liquefier.

Water No. 5. Number of colonies to the cubic centimeter 5680. Theobald Smith's test. Out of nine tubes one gave a trace of gas. From the plates was isolated only the unknown liquefier.

Water No. 6. Number of colonies per cubic centimeter 380. Theobald Smith's test. Out of eight tubes one shows a trace of gas. From the plates there were isolated the unidentified liquefier, the *B. subtilis*, and a number of water saprophytes.

Water No. 7. Number of colonies per cubic centimeter 740. No tubes gave gas by T. Smith's test. The only organism isolated from this specimen was the unidentified liquefier.

Water No. 8. Number of organisms per cubic centimeter 490. Theobald Smith's test. Out of nine tubes eight gave gas formation, one a trace, five less than 30 per cent and two between 30 per cent and 50 per cent. From this water were isolated the *Bacillus coli communis*, the *Proteus vulgaris*, and the unknown liquefier.

Remarks. The liquefier which was present in all the specimens of water, and was the only organism present in some, could not be certainly identified. It resembled very closely however the *Bacillus pyocyaneus*, but did not produce pigment like this organism. There are known to be varieties of the *B. pyocyaneus* which lose their pigment producing properties, and this may be one of them. As will be seen all of the waters contain a larger number of bacteria to the cubic centimeter than is allowable in good drinking water, though several of them are but slightly over the limit. Possibly the numbers should be estimated lower than the count would indicate, as the water was shipped from some distance, and the organisms had a chance to multiply during transit. Waters number 2, 4 and 8 show evidences of fecal contamination in the presence of intestinal bacteria.

Respectfully submitted,

GEORGE BLUMER,

Director

LANSINGBURG SEWERS

SCHENECTADY, N. Y., *January 31, 1898*

DR. BAXTER T. SMELZER, *Secretary State Board of Health, Albany,*
N. Y.:

Dear Sir—On May 21, 1896, you directed me to investigate the matter of a defect in the drainage of a portion of the village of Lansingburg.

A personal examination of the territory on May 23d and on subsequent days showed that the complaint submitted to the State Board of Health by the health officer of Lansingburg—on which the investigation was ordered—was well grounded, but it also showed that in order to determine quantitatively the defects and in order to offer the proper remedy a survey and topographical map and other information would be needed which the officials of the village of Lansingburg were in better position to furnish than I to secure them. I therefore submitted to the health officer of the village a list of items needed by me which he at once endeavored to procure. You have been informed from time to time of the progress made in securing this matter and of the delays suffered; the details of which are unnecessary here.

I beg leave, therefore, to submit the following report on the matter: The village of Lansingburg adjoins the city of Troy on its northern boundary and occupies a long narrow strip of territory extending about two miles from the northern boundary of the city of Troy and about 2000 feet in maximum width. This strip lies on the east side of and immediately on the bank of the Hudson river and extends easterly to the steep hills running north and south. The village in fact is built on the flood plane of the river and like all flood planes of silt bearing rivers, its elevation is highest near the river and descends as one recedes from the bank toward the hills. Originally the drainage of this lower ground on the eastern side of the village passed southerly through the *present* Troy territory, finding an outlet to the river farther

south; but the gradual improvements of the streets of the city of Troy have raised their level to an extent that shuts off the flow of the natural drainage by this route, and in fact the only sewer at this point in Troy is at an elevation too high to furnish the necessary outlet. To remedy the obstructed drainage, the village of Lansingburg some 10 or 12 years ago undertook to build a sewer from the bed of the drainage stream at its intersection with Second street west to the Hudson river; had this been carried out as intended it would have given the desired relief, but from some defect during construction the grade of this sewer, though low enough at the point of leaving the river, was run too high, as it was carried east, so that when the sewer reached the line of the drainage stream to be provided with an outlet, it was found to be too high to admit the water or to drain the low ground. This is shown by the map which is submitted with this report, from which the following elevations are taken:

Elevation (arbitrary datum) of ordinary high water in river	85.00
Elevation of invert of sewer to drain low ground at Second street	89.00
Elevation of invert of sewer as now constructed along culvert	91.95

There would have been, therefore, ample fall from the drainage stream to the river had it been properly used instead of having been used up in the western portion of the sewer near the river as was done.

No serious effort was made by me to trace the responsibility for the defect in construction of this sewer, as the officials report that the original profiles showing the elevations of intended grades have been missing for some years and were made and adopted prior to the date at which such profiles were required to be placed on file at the office of the State Board of Health, and also because the work having been virtually accepted by the village and used for years no recourse could now be had against the party at fault, even if the responsibility could be located.

The drainage area tributary to the stream at the point of its intersection with Second street is about 1100 acres, and the area of the land rendered wet and marshy, and in which the drainage should be improved, is about 15 acres, and this territory lies so closely adjacent to the built-up portions of the village as to render its improvement a sanitary necessity. The health officer, Dr. John Magee, reported to me that he had received numerous complaints of the conditions incident to the defective drainage, and that numerous cases of sickness were, in his opinion, directly traceable to the same cause, and that on this account his village board of health had declared the matter a nuisance.

At the time of one of my visits, which was six or eight days after an ordinary rain storm, I saw water standing in the immediate vicinity of several houses, and at a time of dryer weather I found stagnant water in several pools within a short distance of several dwellings.

Passing to the matter of the best remedy for the defective conditions, there has been a strong faction in the village demanding that the Second street sewer, which was improperly laid, should be taken up and relaid at a sufficiently deep elevation to give the needed drainage.

I do not consider that this is the best remedy available; the present sewer in Second street, although not low enough to drain the low ground in question and the drainage stream, is however satisfactory as a local street sewer; it would cost as much, if not more, to take up this sewer and relay it at a proper depth than it would to build an entirely new one; if a new one is to be built it should be built in a street not now provided with a sewer, so as to furnish local sewerage as well as the drainage of the stream in question; the streets below Second street do not at present demand a sewer from the river to the stream, and to take any street above Second street will require that the drainage flow in the axis of the area now demanding drainage shall be reversed and flow northerly to the new sewer; the topography renders this possible, provided the new sewer be not far removed from Second street. The first street above Second

street is Third street, which is now opened to its full width from the river as far as Fifth avenue, and for about one-half its width as far as Tenth avenue, and therefore past the stream to be drained. Fourth street has been proposed as the location for a new sewer, but this street is only opened at all as far as Fifth avenue, and its prolongation to the stream to be drained would pass through private grounds having quite extensive improvements which would render its appropriation by the village questionable and at best very expensive; moreover, there would appear at present to be little or no demand at this point for another street, and even if otherwise just as available it is less desirable than Third street, as it would require the stream to be tapped farther up stream than would be the case with Third street.

It is not essential that the new sewer should have a flowing capacity equal to the drainage from the stream and the sewerage and storm water of Third street, as the present sewer in Second street will still be available for carrying whatever drainage water reaches the inlet to this sewer at an elevation high enough to enter it: i. e. at any elevation above 91.95, leaving the new sewer to take the drainage below this elevation. To provide for a storm of one inch in an hour over the drainage area of this proposed sewer—which is by no means as large a storm as may be occasionally expected, but which is probably all that is warrantable to provide for—will require a discharge capacity in both the sewers of about 150 cubic feet per second. To place the inlet of the new sewer at such an elevation as to drain the territory in question and still to reserve a fall of 0.3 feet per 100'—the lowest that should be allowed,—to the river, will necessitate giving the invert of the new sewer an elevation of 88.5. I find by calculation that a sewer that will leave the maximum possible amount for the Second street sewer to carry, and will carry the balance itself, will be a circular sewer 5' in diameter. This sewer at its depth of maximum discharge will flow 4' 8" deep, giving an elevation of surface of water inside at inlet of 93.2, and outside in the stream or in the main drainage conduit along

the bed of the stream an elevation of about 93.5, which will allow the water to flow into the old Second street sewer to a depth of 1.5 foot at inlet. The discharging capacity of this 18" of depth will be at least 25 cubic feet per second, leaving the new sewer to take care of the remaining 125 cubic feet per second, which with a fall of 0.3 per 100' will require a circular sewer 4.6 feet diameter. To provide, however, for the sewage and storm water from catch-basins which this sewer will probably be expected to take care of, will require the diameter to be increased to 5 feet.

Ultimately and possibly in the near future the entire bed of the stream will have to be sewered by a large sewer running from the driving park down to Second street. When this is done, the possibility of depending on the stream overflowing on the low lands in this vicinity till a small sewer can lead off the water, will no longer exist as now; the drainage water will have to be led away as fast as it arrives at the inlet to the sewer, hence the importance I have attached to a rather careful consideration of size and grade of this new sewer. The Second street sewer will of course cease to carry any of the drainage as soon as the flood level shall fall below elevation 92.00, and thereafter the drainage coming from the southern part of the bed of the stream will flow northerly past the Second street sewer inlet to the Third street sewer. The invert, therefore, of the main conduit or sewer along the stream bed will need to have a fall from both the north and the south toward the Third street sewer inlet; its elevation at the intersection with the first street south of Second street, which I believe is First street, and the southern boundary of the village, may be 93.20, which will take care of the drainage from this low ground and still have a fall of 0.3 feet per 100' toward the Third street sewer. As this sewer would be conveniently located as a trunk for laterals in streets near the Troy boundary east of the divide, and will have to carry the drainage belonging to this northern part of the territory demanding drainage, it is estimated to require a flowing capacity of 25 cubic feet per second; which will be secured by a

10" sewer from the Troy line to the Third street sewer inlet. The part of the stream north of Third street may possibly present some little difficulty as the maximum grade available from Third street to south line of the driving park, unless the line is swung out onto higher ground, is only 0.2 feet per 100'. This requires a diameter of 5.0 feet of circular sewer. Even at this flat grade the invert will be only 18" below the surface of the ground at the intersection with Fifth street and Sixth street prolonged; this will not be objectionable of itself unless the soil here should be unsuitable for a foundation, since the ground here will require filling in any event.

In the event of bad ground for foundation, it will be a matter of farther examination by borings whether it will be better to secure a foundation on this line by piling or concrete foundation, or to swing the line onto higher and harder ground along the west side of the marsh.

The extension of the line further north presents no difficulty as the ground is apparently good and the fall ample for good grades. It is hardly necessary to say, however, that whenever these grades are extended the diameters should be properly reduced so as not to permit the portion below this point to come under pressure.

I append herewith a map of the village, showing the topography of the locality in question, furnished me by the village authorities.

I have not thought it necessary to make detailed plans of the scheme proposed, as the village has an engineer who should have no difficulty in preparing the necessary details from the general plan here given. In giving attention to the whole stream from the driving park to the Troy line, I have had in consideration the fact that sanitary requirements and the needs for village extension will soon make it necessary to cover the entire stream within the village limits, and when this is done it is absolutely essential that the grades and diameters of the portions within these limits and those of the new sewer in Third street should all conform to a single and complete plan, as the successful operation of each part is intimately dependent on each of the other parts of the system. Failure to understand and adhere to this unity of the

system may easily bring the same sacrifice of a part of the work that the village is now suffering as a result of the deviation from the Second street plan, which, had it been built in accordance with its probably intended plan, would have rendered the present examination unnecessary. It may be proper to explain the apparent discrepancy between the diameters adopted for the Second street sewer and the Third street sewer proposed by me. The length of the Second street sewer, as furnished me by village engineer C. E. Hicks, is nearly 300 feet shorter than the Third street line, as shown on the map furnished me by the village authorities; it is also probable, from the information received at Lansingburg and inference from the levels shown on the Second street line, that its designer intended it to meet the creek at an elevation about 90.00 or 90.5, thus making it about two feet higher at the eastern end; this greater fall and shorter length both contribute to a steeper grade than is possible on the Third street line, on which account a smaller diameter for the same discharge capacity is possible.

As a result of the above investigation, I beg leave to recommend the following plan for the relief of the defective drainage in question:

(1) That a circular brick sewer five feet in diameter be built from the foot of Third street, at the Hudson river, through Third street to the intersection with the stream (Cemetery creek), there curving with an easy radius into the bed of the stream and extending up the stream as far as the south line of the driving park, and later as much farther as may be found necessary.

(2) A 30-inch circular sewer extending from the point where the old line of the stream crosses First street northerly along the bed of the creek passing and joining the present four foot brick sewer on Second street under the culvert, thence passing and emptying into the five-foot sewer at its curve at the intersection of Third street with the stream.

(3) The following elevations and grades are recommended for these two sewers:

THE FIVE-FOOT SEWER

Elevation of invert at foot of Third street, Hudson river.	83.10
Elevation of invert at intersection with line of creek....	88.50
Elevation of invert at intersection with south line of driving park	92.80
Grade of invert from river to intersection with bed of stream	0.3%
Grade of invert from intersection to south line of driving park	0.2%

THIRTY-INCH SEWER

Elevation at intersection of creek bed with First street (invert)	93.20
Elevation at intersection of creek bed with Second street sewer	91.20
Elevation at intersection of creek bed with Third street sewer	88.50
Grade of this sewer throughout its whole length.....	0.3%

From Second to Third street this sewer will at times operate under a pressure of about $2\frac{1}{2}$ feet head, and must be made strong enough to safely carry this pressure. At Second street an intersection must be built with the present Second street sewer to permit of the free discharge of the 30-inch sewer into the 48-inch sewer.

(4) The only portion of the work described above demanding prompt construction is the Third street sewer, from the river to the line of the creek. To prevent stagnation in the open stream above Second street the bed of the creek is much in need of clearing out and obstructions cut out to permit a free flow.

I am, dear sir,

Very truly yours,

OLIN H. LANDRETH,

Consulting Engineer

ALBANY, *March 4, 1898*

*The President of the Board of Health of Village of Lansingburg,
Lansingburg, N. Y.:*

Dear Sir—I have the honor to transmit herewith a copy of the report of Prof. Olin H. Landreth upon his investigation of a complaint made to this Board in 1896 concerning alleged defective drainage in a portion of the village of Lansingburg.

The report of Prof. Landreth was presented at a meeting of this Board held February 22, 1898, at which time the following resolution was adopted:

“State engineer Adams: I move that the report be received and filed; that a copy of it be transmitted to the trustees of the village of Lansingburg and the local board of health, with the request that any dissent from these provisions or desired amendments which those authorities may ask shall be presented by them to the State Board of Health at its next or a subsequent meeting.”

Very respectfully,

T. A. STUART,
Assistant secretary

ALBANY, *March 4, 1898*

*The Board of Trustees of the Village of Lansingburg, Lansingburg,
N. Y.:*

Dear Sirs—I have the honor to transmit herewith a copy of the report of Prof. Olin H. Landreth upon his investigation of a complaint made to this Board in 1896 concerning alleged defective drainage in a portion of the village of Lansingburg.

The report of Prof. Landreth was presented at a meeting of this Board held February 22, 1898, at which time the following resolution was adopted:

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ments which those authorities may ask shall be presented by them to the State Board of Health at its next or a subsequent meeting."

Very respectfully,

T. A. STUART,

Assistant secretary

LANSINGBURG, *March 26, 1898*

To the President of the State Board of Health, Albany, N. Y.:

Dear Sir—By resolution of the board of trustees of this village passed at a meeting held March 22d I was directed to send you the enclosed certified copy of a report, adopted at said meeting, of the joint committee from this board and the village board of health.

Very respectfully,

FRANK H. MITER,

Village clerk

LANSINGBURG, N. Y., *March 21, 1898*

To the Village Board of Health and the Board of Trustees of the Village of Lansingburg, N. Y.:

Gentlemen—In regard to the matter of the drainage of a portion of the Fourth ward of the village and of the report of Mr. Olin H. Landreth, consulting engineer of the State Board of Health, I have the following suggestions to offer:

That the trunk sewer from the river to the line of the creek should be through Fourth street. for the reason that the present drainage area between Second and Third streets is taken care of by the Second street sewer, and there being no provision for the area between Third and Fifth streets, a sewer through Fourth street would be the only practical way of taking care of that territory, and would do away with the necessity of building another sewer, as there will be no necessity for a sewer through Third street in the future.

The sewer through Fourth street should be egg-shaped, for the reason that it would be used for house sewage as well as for storm water, and during the dry period of the year the

flow of Cemetery creek is very small, and it would, therefore, be best to use the egg-shaped sewer in order to concentrate the flow of sewerage and give it more depth in order to make it more readily self-cleaning. The grade of this sewer can be 0.50 per 100 feet instead of 0.30 per 100 feet, and, therefore, a sewer 3 feet and 6 inches by 5 feet and 3 inches would be large enough. The elevation of the east end of the sewer at the creek should be 88.00 and at a point about 100 feet from the river 79.00, and then drop 4 feet in the next 100 feet, making the elevation of the mouth of the sewer 75.00, and would, therefore, bring the mouth of the sewer under the ordinary flow line of the river, as the high water elevation of the river is 85.00 and last but a few days in each year, in the spring and fall, and as the average flow line of the river is 80.00 and 81.00 it will at once be seen that a sewer with a grade of 0.50 per 100 feet can be put in, and which will perfectly drain the whole territory in question.

In regard to the territory south of Fourth street, I would suggest as follows: That a 20-inch sewer pipe be built south of Second street along the line of what would be Eighth avenue, and extending south of the Second street sewer to what is known as Boutwell street, a distance of about 500 feet, and connecting with the Second street sewer, and to have a grade of 0.25 per 100 feet.

Also that a 20-inch pipe sewer be built north of Second street, along what would be the line of the alley between Eighth and Ninth avenues, and extending north of the Second street sewer, a distance of 500 feet, and connecting with the Second street sewer, and to have a grade of 0.25 per 100 feet.

Also that a 24-inch pipe sewer be built from a point 300 feet south of Third street, and to run north and connect with the sewer in Fourth street, and to have a grade of 0.25 per 100 feet.

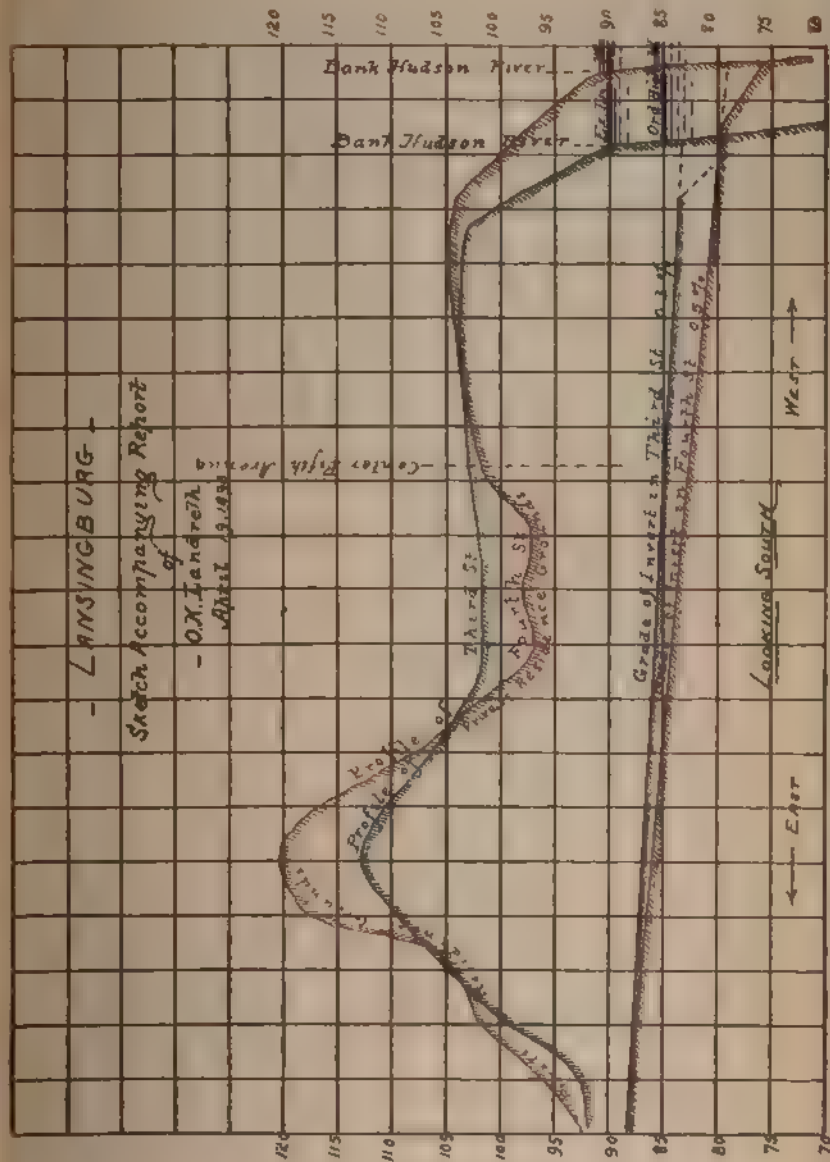
As the water in the Cemetery creek has to reach an elevation of 92.00 before entering the present Second street sewer, and as that is the same elevation as the creek at Fourth street, the

- LANSINGBURG -

Sketch Accompanying Report

- OX. Landreth
April 9, 1893

- Center Fifth Avenue



location of sewer in Fourth street would be preferable to any other, for the reason that it would more equally divide the low ground between the summit point, or upper ends of the 20-inch and 24 inch pipe sewers as suggested, and the low ground north of Fourth street.

As the whole territory south of Second street as far as Boutwell street and north of Second street as far as Seventh street will ultimately have to be filled in more or less, the matter of sewerage extension in the territory involved can be attended to as demanded, and under a general system, and after the construction of the main or trunk sewer to the river.

The above suggestions are made after a careful and extended examination and surveys of the whole territory, and a familiarity with the whole matter for the past nine years.

Very truly yours,

C. E. HICKS,

Village engineer

GEO. H. WOOD,

Village president

EUGENE L. DEMERS,

Chairman village board of health

FRANK H. MITER,

Village clerk

ALBANY, N. Y., March 28, 1898

FRANK H. MITER, *Village clerk, Lansingburg, N. Y.:*

Dear Sir—I am in receipt of your communication of the 26th inst., enclosing a copy of a resolution adopted at a joint meeting of a committee from the trustees and board of health of the village of Lansingburg, in the matter of the drainage of a portion of the fourth ward of your village.

In reply you are informed that the papers in the case will be submitted to this Board at a meeting to be held April 1, 1898, in New York city.

Very respectfully,

BAXTER T. SMELZER,

Secretary

SCHENECTADY, N. Y., *March 29, 1898*

Dr. BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—I am in receipt of your favor of the 28th inst., relating to the resolution passed by the committee of the trustees and board of health of Lansingburg and submitted to the State Board of Health.

While I have been informed by the village attorney that such a resolution involving some modifications of my plan had been adopted, I have not been informed and do not know anything as to the nature of those modifications; I am not therefore able to say whether the change proposed will overcome the defects found by me. I shall need to see the changes proposed and the village map submitted by me—as I kept no copy—in order to enable me to decide on this point. You may either send them to me or I will come over to the office as you may prefer. I trust that the Utica matter will be determined at the coming meeting of the Board as the authorities there are very impatient to abate the violation of the rules. I am, dear sir, very truly yours,

OLIN H. LANDRETH,
Consulting engineer

ALBANY, N. Y., *March 30, 1898*

Prof. OLIN H. LANDRETH, *Consulting engineer, State Board of Health, Union college, Schenectady, N. Y.:*

Dear Sir—I send you herewith inclosed copy of resolution received at this office in the Lansingburg matter. If you have any recommendations to make thereon, it is requested that you send them direct to me at the Imperial hotel, New York city, so that I may have them in time for the meeting to be held on Friday, April 1, 1898.

Very respectfully,

BAXTER T. SMELZER,
Secretary

LANSINGBURG DRAINAGE DEFECTS AND REMEDIES

Answer of Olin H. Landreth, Consulting engineer to the recommendations of changes proposed by Mr. C. E. Hicks, village engineer. Dated April 19, 1898.

SCHENECTADY, N. Y., *April 19, 1898*

Dr. BAXTER T. SMELZER, Secretary State Board of Health, Albany, N. Y.:

Dear Sir—In response to your request of March 30th that I send you any recommendations regarding the communication of Mr. C. E. Hicks, village engineer of Lansingburg, on the matter of the report on the drainage of certain portions of the village of Lansingburg, I beg to reply that the map which Mr. Hicks had loaned from your office and which is pertinent to the matter, has just reached me, hence my delay in sending these answers to Mr. Hicks' recommendations.

For the purpose of bringing each recommendation of Mr. Hicks and my answer to it together, so as to be properly understood, I give herewith each of Mr. Hicks' recommendations in succession followed by my answer.

Mr. Hicks says: (I) "That the trunk sewer from the river to the line of the creek should be through Fourth street, for the reason that the present drainage area between Second and Third streets is taken care of by the Second street sewer, and there being no provision for the area between Third and Fifth streets, a sewer through Fourth street would be the only practical way of taking care of that territory, and would do away with the necessity of building another sewer, as there will be no necessity for a sewer through Third street in the future."

To this I beg leave to reply:

1 A sewer through Fourth street would strike the creek to be drained—Cemetery creek—four hundred feet further upstream than if placed in Third street. This would require the invert of the new sewer to be placed 1.2 feet lower than at Third street in order to receive the drainage from the district south of Second street, which has no other outlet and though it may in future be

filled up, still there is no probability nor necessity that it will ever be filled high enough to give it natural drainage over the divide or even into any existing sewer in its vicinity, and one object in the present plan is to obviate any future necessity for another new sewer in this vicinity deep enough to drain this territory into the river. The grade of the proposed 30-inch sewer running from this southerly territory north along Cemetery creek is already as flat as should be considered, 0.3 feet per 100 feet, and its southerly end cannot be placed higher than now planned and drain the territory; lowering the sewer at intersection of Fourth street and Cemetery creek—if that route is chosen—is, therefore, unavoidable; but lowering the sewer at the creek line will flatten its grade, for its river end cannot be altered; the present grade, however, is as flat as can be safely considered, 0.3 feet per 100 feet, and Mr. Hicks' proposed plan of making its grade steeper by lowering the river end, I shall presently show to be unavailable and undesirable. (2) The proposed sewer through Fourth street would be about 130 feet longer than through Third street. (3) The proposed sewer through Fourth street with the grade lowered as required above by 1.5 feet throughout would require about 1200 cubic yards more of excavation than through Third street, or if lowered to the grade proposed by Mr. Hicks, would require about 2000 cubic yards more than in Third street. About 700 cubic yards of this would be in very deep cutting, where the price per cubic yard would also be high. (4) Third street is now opened for the entire length from the creek to the river, and no right-of-way damages would be incurred, while Fourth street, for two-thirds of the distance from the creek to the river, not only has not been opened, dedicated nor condemned for street purposes, but the projected line passes through private grounds finely improved and either through or so near to the residence as to make right-of-way damages for a street through the grounds very heavy. (5) A sewer through Third street will offer quite as extended sewerage facilities to adjacent territory, in addition to its prime purpose as a drainage outlet for the creek, as one through Fourth street, and I fail to see why it would not offer considerably more;

however, the prime purpose of the sewer should be kept in mind, and it should not be diverted from its location of maximum efficiency and minimum cost simply to furnish sewerage for streets all of which will soon require sewers, and all of which can be laid shallower and drain directly into the river or into the proposed new sewer, whether laid in Third or Fourth street, about equally well. All of the above five reasons except the first are based on considerations of economy to the village rather than to the efficiency of the proposed drainage remedy. They are given above rather fully, simply to show that the financial questions were carefully considered in the first plan proposed. The first reason stated is essential to the operation of the system, and apart from all considerations of economy to the village corporation I should not recommend the placing the sewer in Fourth street.

Mr. Hicks further says:

(II) "The sewer through Fourth street should be egg shaped, and for the reason that it would be used for house sewage as well as for storm water, and during the dry period of the year the flow of Cemetery creek is very small, and it would, therefore, be best to concentrate the flow of sewage and give it more depth in order to make it more readily self-cleansing.

(III) "The grade of this sewer can be 0.50 per 100 feet instead of 0.30 per 100 feet, and, therefore, a sewer 3 feet 6 inches by 3 feet 3 inches would be large enough. The elevation of east end of the sewer at the creek should be 88.00 and at a point about 100 feet from the river 79.00 feet, and then drop 4 feet in the next 100 feet, making the elevation of the mouth of the sewer 75.00, and would, therefore, bring the mouth of the sewer under the ordinary flow line of the river, as the high water elevation of the river is 85.00, and lasts but a few days each year, in the spring and fall, and as the average flow line of the river is 80.00 and 81.00, it will at once be seen that a sewer with a grade of 0.50 per 100 feet can be put in, and which will perfectly drain the whole territory in question."

To this I have to say:

Concerning (III): The drop in the sewer at the river end to bring the mouth below ordinary flow line, is a detail of execution which the local situation may govern both as to extent of drop and distance over which it is spread. No question is here raised against it; but it is important to understand that the grade along this steep part of the drop does not in any sense determine the rate of discharge of the sewer, nor its necessary diameter; these are dependent on the grade of the long flatter portions, whose grade becomes thus the ruling gradient of the sewer; the elevation of this ruling gradient at the river would be for Mr. Hicks' system of grades, 78.5; with a diameter of 5.00 feet, or a vertical diameter of 5'—3'', as proposed; the grade of the water surface in the sewer when flowing full would be thus $79' - 0.5' \times 5' - 3'' = 83.75$ or 1.25 foot below the level of high water, which occurs, according to the information furnished me, on several days of each fall and spring. Now, the time of high water in the river is also quite likely to be the time of high water in the Cemetery creek, and accordingly the time when the greatest discharging capacity is called for. If, at these times, the rise of the river is such as to reduce the flowing capacity of the sewer by cutting off 1.25 foot in the fall of the sewer, the remedy promised by the construction of the sewer will be of no great value, for it would thus fail to give the desired relief at the time of urgent need, viz., at the time of high water in the creek and river; there is no pressing need for large discharging capacity at low water or during dry or even ordinary seasons; but when it is needed, it should be available, which would not be the case if its capacity were reduced by back-water from the river at high water. It should also be remembered that the ordinary high water elevation of 85.00 is frequently exceeded, at all of which times the loss of fall in the sewer would be even more than 1.25 foot. Neither is the elevation of the east end, as proposed by Mr. Hicks, in my opinion feasible. My proposed elevation for Third street was 88.50; to change to Fourth street necessitates, as I showed at the outset, a fall of 1.5 feet, making the elevation of east end of sewer gradient 87.00. Nothing higher than this will, in my opinion, drain the territory seeking drainage

through this outlet, if the surface elevations shown on the map prepared by Mr. Hicks are correct, as I have no doubt they are. To place the grade at east end at 88.00, or one foot higher, as Mr. Hicks proposes, would, in my opinion, still further impair the value of the sewer as a remedy for existing conditions. If, as I have shown, the steeper grade proposed by Mr. Hicks will be rendered inoperative by the high water of the river—which in reality would determine the true flowing gradient in this case—then it would appear unwarrantable to incur expense of laying the sewer at any steeper grade than that so determined, since the steeper grade could only be secured by laying the sewer deeper at the west end, with consequent increased cost of excavation. For the reasons stated, I do not recommend the grade proposed by Mr. Hicks.

Concerning (II): The question of the shape of the sewer cross section was carefully considered in preparing my original report. An egg shaped section is preferable when danger of fouling exists, and no reasons against it occur. In the present case the amount of domestic sewage in proportion to the storm water is so small that no possible danger of fouling can occur; an ordinary trunk sewer of this size will usually have miles of lateral sewer discharging into it, bringing in large amounts of domestic sewage and usually small amounts of drainage water, as the storm water enters such sewers usually through catch basins only, which discharge only during storms; no natural streams usually entering to furnish a continual supply of water to maintain a clean condition. In this case, however, the amount of sewage proper will always be very small, and there will always be a considerable amount of natural drainage water flowing; ample to prevent fouling. The necessity for the egg shape is, therefore, wanting. An egg-shape sewer is, in any case, more expensive per linear foot than a circular sewer of the same capacity, as the periphery is a little greater, the thickness frequently has to be made greater, and the price per thousand brick laid is often higher. In the present case there is another objection to this shape: Usually the elevation of grade of a trunk sewer is determined by the elevation of

its bottom or invert line, the water-surface rising to any height that may be necessary to furnish the needed discharge. In this case, however, it is the water-surface that is fixed or determined by the height of the ground surface to be drained, and by the height of the surface of water in the river at ordinary flood; these determine the crown-line of the sewer instead of the invert, and the sewer must be designed below this line to furnish the needed discharge. An egg-shaped sewer evidently will have to be extended farther down from this crown-line than a circular sewer, with a consequent cost of excavation. Mr. Hicks' dimensions proposed, viz., 3'—6" by 5'—3" were evidently based on the 0.5% grade, which I have shown impracticable. For the grade adopted by me, of 0.3%—which I should be very glad to increase if I knew how it could be accomplished—the necessary dimensions for an egg-shaped sewer of the same capacity as a 5-foot circular sewer would be about 4'—2" by 6'—3", calling for an excavation 15 inches deeper throughout the whole line than the circular sewer 5 feet in diameter, while the width of the trench would have to be as wide as for the 5-foot circular sewer on account of the increased thickness of the egg-shaped sewer. While I certainly do not recommend the egg-shaped sewer in place of the circular one, my reasons for thus declining to recommend are simply owing to the increased cost and absence of any visible advantage and if the village authorities desire the egg-shape I have no objections, as it will comply with the drainage requirements as well as the circular one. The size, however, will have to be the equivalent of the 5-foot circular one, which condition Mr. Hicks' dimensions do not comply with.

Mr. Hicks says:

(IV) "In regard to the territory south of Fourth street, I would suggest as follows: That a 20-inch pipe sewer be built south of Second street along what would be Eighth avenue, and extending south of the Second street sewer to what is known as Boutwell street, a distance of about 500 feet, and connecting with the Second street sewer, and to have a grade of 0.25 per 100 feet."

To this I have to reply: The elevation of the Second street sewer invert at Eighth avenue, where Mr. Hicks proposes to connect with it, is 91.95. The 20-inch sewer at Boutwell street would, therefore, have an elevation of invert of 93.20 and an elevation of crown-line of 94.87, while the ground in that whole region is lower than that. Such a sewer, it is hardly necessary to say, would offer no sort of relief whatever to the present conditions in the territory south of Second street.

Mr. Hicks says:

(V) "Also that a 20-inch pipe sewer be built north of Second street, along what would be the line of the alley between Eighth and Ninth avenues, and extending north of the Second street sewer a distance of 500 feet, and connecting with the Second street sewer, and to have a grade of 0.25 per 100 feet."

(VI) "Also, that a 24-inch pipe sewer be built from a point 300 feet south of Third street, and to run north and connect with the sewer in Fourth street, and to have a grade of 0.25 per 100 feet."

To this I have to say concerning (V): The elevation of the invert of the Second street sewer at the point where this proposed sewer would join the Second street sewer is 93.42, and its grade of 0.25 per 100 would place its invert of this 20-inch sewer at a point 500 feet north of Second street 94.67. This is just the elevation of the surface of the ground at this point, and is 2.87 feet above the bed of the creek about 100 feet west of the point. This sewer, therefore, can offer nothing whatever toward the settlement of the drainage of the creek, and I fail to see how it can even render local sewerage or drainage even along its actual line. Concerning (VI): If it is proposed to locate this 24-inch sewer along the present bed of the creek, or at an elevation low enough to drain the creek bed along this distance, then it is satisfactory as far as it goes, but does not extend far enough south; it should go to Boutwell street south, and to carry this drainage with the flat grade it will have, should be 30 inches in diameter; which, then, is the same as I recommended in my original report, except that the one

proposed by me had a grade of 0.30 per 100 feet, and discharged into my proposed 5-foot sewer at a point of intersection of Third street and the creek, instead of at Fourth street. I append hereto a sketch of the profiles of the ground over which the sewer lines would pass, both through Third street and through Fourth street, on which the superiority of the Third street location, so far as it concerns excavation, is quite evident.

The following is a summary of my recommendations concerning Mr. Hicks' proposed changes:

(I) I recommend that Fourth street be not adopted for the trunk sewer, as its adoption would seriously interfere with the effectiveness of the drainage remedy needed, and would also greatly increase cost.

(II) I do not object to the egg-shaped sewer, as reducing the efficiency of the plan of remedy, but I do not recommend it as it is quite unnecessary, and will cost appreciably more than the circular one.

(III) I object strongly to the reduction in size of sewer, as being too small to meet the requirements of drainage. The steepening of sewer grade does not steepen the flowing gradient, and hence will not warrant reducing the diameter, and will very materially increase cost. I, therefore, do not object, nor do I recommend it.

(IV) The 20-inch sewer from Second street south, as proposed by Mr. Hicks, would have no value whatever as a remedy for the difficulty here.

(V) The 20-inch sewer from Second street north, along the alley between Eighth and Ninth avenues, would have no value whatever as a remedy in the present difficulty.

(VI) The 24-inch sewer proposed is inadequate in length and in diameter.

I am, dear sir, very truly yours,

OLIN H. LANDRETH,

Consulting engineer

ALBANY, April 27, 1898

Prof. OLIN H. LANDRETH, *Consulting engineer, State Board of Health, Union college, Schenectady, N. Y.:*

Dear Sir—I am in receipt of your answer to the recommendations of changes in Lansingburg sewers as proposed by Mr. C. E. Hicks, and will present the same to the Board at its next meeting.

Very respectfully,

BAXTER T. SMELZER,

Secretary

SCHENECTADY, N. Y., August 15, 1898

Dr. BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—I have recently received the two letters inclosed from Dr. H. L. Ives, health officer, and Mr. Frank H. Miter, village clerk, respectively, of Lansingburg, N. Y., making inquiries as to the sewerage matter of their village. I have replied to both these letters that my answer to Mr. Hicks' modifications to the sewer plans had been submitted to your office.

The letters are sent you on account of the reference in Dr. Ives' letter to a change in jurisdiction of sewers in their village.

I am, dear sir, very truly yours,

OLIN H. LANDRETH,

Consulting engineer

LANSINGBURG, August 10, 1898

OLIN H. LANDRETH, *Schenectady, N. Y.:*

Dear Sir—At a meeting of the board of health of the village of Lansingburg, held last night, I was instructed to write you in regard to the sewer to drain the swamp lands in the southern portion of the village. It is desired that you bring the matter before the State Board of Health as early as possible and have some definite action taken in the matter, for the people who wish relief are getting to murmur; they think it is time the matter was attended to; they wish some decided action soon. By an act of the last Legislature all power of constructing sewers in this village was given to the water commissioners regardless of the

trustees; therefore all communications from your board may be had with them direct in regard to the subject under consideration. Hoping that you will give this your earliest attention, I am yours very truly,

H. L. IVES, M. D.,
Health officer

LANSINGBURG, August 12, 1898

OLIN H. LANDRETH, *Consulting engineer, Schenectady, N. Y.:*

Dear Sir—I am directed by the board of trustees to request you to give an outline of your objections to the proposed sewer in . Fourth street.

Thanking you in advance for the courtesy, I am, very respectfully,

FRANK H. MITER,
Village clerk

ALBANY, August 17, 1898

Prof. OLIN H. LANDRETH, *Consulting engineer, State Board of Health, Union college, Schenectady, N. Y.:*

Dear Sir—We are in receipt of your communication of the 15th inst., with inclosures making inquiries as to the present status of the question of sewers for the village of Lansingburg.

In reply you are informed that all the papers in the case will be submitted to this Board at its next meeting, with the recommendation that some decided action be taken.

Very respectfully,

T. A. STUART,
Assistant secretary

LANSINGBURG, N. Y., August 23, 1898

Dr. BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

My Dear Sir—On March 21st of this year I sent a communication to the village board of health of this village in regard to the defective drainage in the Fourth ward of this village. In the above I made certain suggestions in regard to changing somewhat the plan as recommended to you by Prof. Olin H. Landreth,

in his communication of January 31, 1898. I understand that Mr. Landreth does not approve of the changes which I have suggested. Now it is simply a matter of a difference of opinion of two engineers, one of whom never saw the territory in question until sent to look at it a couple of times, and the other, who has been perfectly familiar with the whole matter and territory for the past 10 years.

I have this suggestion to make to you at the request of the chairman of the village board of health, that if agreeable to you, a representative of the board of health, also of the board of trustees, and myself attend a meeting of the State Board of Health, in the near future, and there meet Mr. Landreth, and we could talk the matter over with you. Kindly let me know if this meets with your approval.

Very truly yours,

C. E. HICKS

ALBANY, August 25, 1898

C. E. Hicks, *Lansingburg, N. Y.*:

Dear Sir—Your communication of the 23d inst., in the matter of defective drainage in the village of Lansingburg, as shown by the report made by Prof. Olin H. Landreth, has been received.

As all the papers in the case will be presented at the next meeting of this Board, if you will furnish us with the names of the members of the board of health and board of trustees of Lansingburg who desire to be present, we will notify them of the time and place of meeting, as suggested by you; we will also notify you at the same time.

Very respectfully,

T. A. STUART,

Assistant secretary

ALBANY, October 15, 1898

Hon. BAXTER T. SMELZER, *Secretary State Board of Health*:

Dear Sir—I return to you the several papers and the map and profile of the proposed sewers in Lansingburg, together with a

copy of my communication to the chairman of the village board of health. You will see by reading it that any further action depends upon the village of Lansingburg.

Very respectfully yours,

C. W. ADAMS,

State engineer and surveyor

Chairman drainage committee, State Board Health

ALBANY, October 14, 1898

EUGENE L. DEMERS, *Chairman Board of Health, Lansingburg, N. Y.*

Dear Sir—I have before me the papers in connection with the petition of the board of health of Lansingburg to the State Board of Health, relative to the construction of a trunk sewer from the river westerly to Cemetery creek. As you are aware, I have looked over the situation on the ground.

At the last meeting of the State Board of Health, September 26, 1898, the chairman of the drainage committee, who is the State engineer, was given power to settle this matter, and when the plans for the sewer were made satisfactory to him, the Secretary of the State Board of Health was authorized to affix the approval clause.

It appears that previous to this time a system of sewers for Lansingburg was planned and the plans were approved by the State Board of Health. Under the law any change in that plan, whether it be the substitution of a different sized sewer than the one shown in any street mapped, or whether it be the construction of a sewer in a street now shown on that map, such new work would be a change of plan and requires the approval of the Board, hence it follows that we must have plans of the sewer you propose to have built before we can approve them.

I am prepared to report to the Board, unless such action has already been taken, that a trunk sewer in the neighborhood in question should be built for the good of the health of the community.

Former village engineer C. E. Hicks proposes a trunk sewer of egg-shaped section, about equal to a 5-foot diameter circle.

cular brick sewer to be laid in Fourth avenue and continued still easterly across private property to the Cemetery creek, and at this point other pipe sewers were to be laid from Second avenue northerly to connect with the end of the trunk sewer at Fourth avenue prolonged. He fixes the elevation of the invert of the trunk sewer at Cemetery creek to be 88.00, and thence gives a grade to the river to the sewer of 5-10ths of a foot per 100'.

Certain property interests in Lansingburg have objected to the construction of this sewer as proposed. Our consulting engineer, Olin H. Landreth, has heretofore examined into the circumstances and has reported to the State Board of Health, giving conclusions that a better location for the trunk sewer would be from the river through Third street easterly through a narrow street, assumed to be a continuation of Third street, to the Cemetery creek, and he gives to this sewer a diameter of 5 feet. He fixes the elevation at the creek at 88.50, and gives to it a grade of 3-10ths of a foot per 100 feet. He also proposes pipe sewers to be laid in or near the bed of Cemetery creek from a point near Boutwell street northerly to the end of his 5-foot trunk sewer.

It appears to be a fact that a brick sewer 4 feet in diameter has heretofore been constructed in Second street from the Hudson river easterly to the said Cemetery creek. The elevation of the invert of this sewer being 91.95, which is practically the elevation of the surface of the water in the creek during the summer season. If this Second street sewer had been laid at a lower depth, with the easterly terminus at about 88.0 elevation, it would have had a practicable grade downward to the Hudson river and would have taken the water from Cemetery creek, which it does not now take, and which has induced the conditions that now prevail, creating swampy land and making it impossible to lay to a proper depth lateral sewers into it along the low lands bordering the creek.

The best solution of this problem would be to rebuild the Second street sewer from the river to the creek, giving it the proper depth and grade. This action, however, is impracticable,

as much of the property assessed for the Second street sewer is benefited by its construction as it now exists, and the expense of a new sewer would cause strong opposition to its building.

The chief reason why a new sewer in Second street would be the best plan is because it is the nearest to the southerly or low est end of the Cemetery creek, and lateral sewers could be laid to much more effectively drain the low land contiguous.

It is apparent that the route for a new trunk sewer nearest the Second street ought to be the next best solution of the difficulty. That is the one proposed by Prof. Landreth, and the plan and profile for his proposed sewer are practicable. The construction of this Third street sewer appears to be objected to, however, by the owners of property which lies south of and bounded by Third street, and the reason for this objection by the owners of this property is apparent when it is known that the land has been laid out into building lots, with the avenues at present terminating on the north at Third street, and some of these avenues being provided with sewers which discharge into the Second street trunk sewer already constructed, a good proportion of these property owners hence being already provided with sewers. The balance of this particular property cannot drain into the Second street sewer and want a new one.

The Fourth street sewer, above described, proposed by Mr. Hicks, will take care of the Cemetery creek and will also take care of the property owners between Second street and Fourth street, both to the north and south of Fourth street about as well as would the proposed Third street sewer. It will also operate as a local sewer in Fourth street, which now has none, but needs one. It is equally feasible to build lateral sewers in the avenues now open, as well as in the avenues not yet opened, between Second street and Fourth street, and northerly, that shall discharge into the proposed sewers in either Third or Fourth streets.

It appears to be undisputed that the officers of the village, including the board of health, the trustees and the sewer or water commissioners, to believe that the majority of the tax-

payers interested want the sewer built in Fourth street. This Fourth street sewer, however, is opposed by the owners of the Gould residence and surrounding grounds, who oppose any action tending to disturb them in the possession and occupation of these premises as they now exist, and they fear the construction of the Fourth street sewer would of necessity be preceded by the opening of the extension of Fourth street as a public street easterly from Fifth avenue to the railroad.

I am prepared to exercise the power conferred upon me by resolution of the State Board of Health to settle this matter by approving of the Fourth street route, but before the approval is given I must have a plan and profile of the sewer, which will show, on tracing cloth, the alignment and grade to be given it, and which shall show enough of the territory in question to plainly indicate wherein the proposed sewer is an extension of or changing of plan of the system of sewers heretofore approved, so that it will be evident to the Board what change is involved.

I shall also require that the elevation of the easterly end of the trunk sewer shall be not higher than 77.50, as the effective grade of this sewer cannot be different from the effective grade of the proposed Third street sewer, and as the Fourth street route is somewhat longer than the one in Third street, it follows that the Fourth street sewer should have larger section than the Third street sewer, provided the latter has been designated upon good accepted practice in sewer work.

I am assured by Prof. Landreth that his proposed 5 foot diameter sewer has been thus calculated, and hence the proposed Fourth street sewer should be somewhat larger than 5 feet diameter. It may be either circular or egg shaped, as detailed plans and estimates may show to be the most economical construction.

These plans, above required, should be in duplicate, at least one of them must be on tracing cloth, and it must be accompanied with a description of the sewer to be built and of the proposed construction.

When these requirements are made I am prepared to advise the secretary of the State Board of Health to affix the approval clause, as required by law and authorized by the Board.

I am, very respectfully yours,

C. W. ADAMS,

State engineer and surveyor

Chairman drainage committee, State Board Health

ALBANY, October 17, 1898

Hon. C. W. ADAMS, *Chairman drainage committee, State Board of Health, Albany, N. Y.:*

Dear Sir—I am in receipt of your communication returning the several papers with the map and profile of the proposed sewers in the village of Lansingburg, together with a copy of your letter to the chairman of the village board of health, and note your recommendation as to submitting proper plans with an accompanying description of the sewers to be built, etc.

Very respectfully,

BAXTER T. SMELZER,

Secretary

CAMP BLACK

Water Supply

QUARANTINE, S. I., October 1, 1898

DANIEL LEWIS, *President State Board of Health, Albany, N. Y.:*

Dear Sir—As a representative of the State Board of Health I visited on September 7th with Dr. Baxter T. Smelzer, secretary of the said Board, Camp Black, situated at Hempstead, L. I., at the time containing a number of New York regiments. This in-

spection was desired by Governor Black, as complaint had been made that the drinking water used at this post was infected and had resulted in an outbreak of typhoid fever. Inasmuch as the inspection was made for the specific purpose of investigating the water supply, no other facts in connection with the camp will be referred to. At the time of the inspection the water used for drinking purposes was brought from the Hempstead water works, a considerable distance. The water was conducted from the said place by pipes of the proper calibre and construction which were laid along the company streets, furnishing an ample supply of water both for drinking and other purposes. There was no evidence that at any point between the reservoir and the outlets at the camp, infection could have been introduced into the said water supply, nor was there any evidence that typhoid fever existed in or about Hempstead. A further investigation showed that numerous wells had been dug about the camp soon after its occupation; that these wells were dug without regard to the position of the different commands and without proper care to prevent infection through the medium of fecal matter. It was also learned that after the water supply had been secured from Hempstead, that the men continued to use the water from these wells for the reason that it was colder than that secured through the proper channels. The number of cases of typhoid at the camp at this period was greatly exaggerated, but it was found that the regiments or companies where typhoid fever appeared used drinking water from the wells above referred to, and it is my opinion that the infection came through this source. This is corroborated by the fact that a week or so before our inspection, stringent orders had been issued that the water in the wells about the camp was not to be used under any circumstances and measures were taken to enforce it. As a result typhoid fever abruptly disappeared within a short time, and I believe our recommendation to the commandant of the post, that all wells in and about the camp should be closed and that all water used for drinking purposes should be taken from the mains

brought from Hempstead is the proper one. A careful chemical and bacteriological examination of the Hempstead water showed it to be pure and free from contamination.

Respectfully,

A. H. DOTY,

Health officer Port of New York

NEW YORK, *September 15, 1898*

ALVAH H. DOTY, M. D., *New York State Board of Health, Albany, N. Y.:*

Sir—Please find inclosed the results of the examination of the sample of water taken by me from a tap located near the general hospital at Camp Black, Hempstead Plains, Long Island, on Saturday, September 10, 1898. I was informed at the time, by the surgeon in charge, that this supply represented the water used in the entire camp, the water from local wells having been discontinued some time ago and pumps removed.

The water is of good quality.

Respectfully,

ERNST J. LEDERLE, PH. D.

Chemist

(Analysis No. 5019)

NEW YORK, *September 15, 1898*

CERTIFICATE OF ANALYSIS

Sir—The sample of water from pipe line supply, Camp Black, Long Island, N. Y., submitted to me for examination, contains in parts per 100,000:

Appearance, very slightly turbid; sediment, very slight; color, very faint brownish; odor (heated to 100 degrees Fahr.), none; chlorine in chlorides, 0.792 (equivalent to sodium chloride, 1.308); phosphates, none; nitrogen in nitrites, none; nitrogen in nitrates (reduction by sodium amalgam), 0.0741; free ammonia, trace (less 0.0001); albuminoid ammonia, 0.0015; total nitrogen, 0.0753; hardness equivalent to carbonate of lime, before boiling, 2.80; after boiling, 2.72; organic and volatile (loss on ignition) 2.00; mineral matter (*non-volatile*), 4.00; total solids (by evaporation) 6.00.

This sample of water appears to be of good quality; it is uncontaminated in its present condition, soft and suitable for use for all domestic purposes.

Respectfully,

ERNST J. LEDERLE, Ph. D.,

Chemist

To ALVAH H. DOTY, M. D.

SCHOOLS OF CITY OF MIDDLETOWN

MIDDLETOWN, N. Y., *October 14, 1898*

BAXTER T. SMELZER, *Secretary State Board of Health:*

Dear Sir—In replying to your letter of September 30, 1898, I beg to state that I was in entire ignorance regarding reports to be made to your Board, and as I had no copy of the law, my predecessor not informing me in the matter, I consider that my mistake was due to the neglect for some years past of communication with your Board by the city authorities. I therefore shall endeavor to give you accurate reports of each month since I took the health office on March 8, 1898. When I took the office there were on record 19 cases of scarlet fever reported during January and February; during March, 3 cases scarlet fever, 1 case diphtheria; during April, 4 cases scarlet fever, 2 cases diphtheria; during May, 12 cases scarlet fever, 2 cases diphtheria; during June, 9 cases scarlet fever, 2 cases diphtheria, 2 cases typhoid; during July up to July 20th, 8 cases scarlet fever, 2 cases diphtheria unreported from June; on August 13, 1898, 1 case scarlet fever, no other cases of infectious diseases; during September, from September 17, 1898, up to date, October 14th, 22 cases diphtheria, 4 cases scarlet fever, 5 cases typhoid fever. What I wish to call especial attention to is the fact that at the beginning of the school year, Sep-

tember 6, 1898, there were no reported cases of infectious diseases, also that there were no cases of scarlet fever after July 20, 1898, excepting a case reported on August 13, 1898. From that time until school opened, and for two weeks after, no diseases existed. Then our trouble commenced, and since that time 22 cases of diphtheria developed.

The school in which the most cases occurred, after complaint of several parties, was made a subject of a searching examination and closed by the order of this board. There were open sewer traps in the cellar and outside in the playground, and the water-closet system was filthy in the extreme. Also, the other schools were given a rigid examination and all but two schools were found defective in sanitary arrangements. As a result the board of health passed resolutions which were forwarded to your Board by our clerk. These resolutions were intended to do away with the vile conditions found and replace them by modern sanitary appliances. The board of education of our city, of course, raised the objection of lack of funds to do the work ordered and seem to think that if they repair one school it is enough, but the inference is plain that where others are found defective they should be put in such shape as not to breed disease among the children. Last year, in another one of our schools, there were many cases of scarlet fever, and this school is supplied with the same unsanitary system as the school now under discussion. Do you see any reason why our schools should not *all* be supplied with proper sanitary appliances? Our local board and myself consider that these places are where children are most liable to contract these diseases and that, therefore, *all* of them should be just as sanitary as they can possibly be made. As you see we have a good-sized epidemic of diphtheria, and, as far as I know, there have been several deaths, including one case of spinal meningitis, dying under suspicious circumstances, and two cases of follicular tonsilitis, dying under suspicion of diphtheria. I believe, so far, one or two deaths from reported diphtheria, antitoxine has been largely used and does its work well. There is the usual trouble with cases variously reported as tonsilitis, croup, etc., to avoid put-

ting a card on the house. But I have succeeded in bringing several such cases to light and putting a card up. I consider our quarantine regulation as defective, inasmuch as it allows the wage-earner of the family to have free access in and out of the house; in this particular they are at variance with the state law. I also find that the vaccination law has been totally ignored, and there must be 600 or 800 children who are not protected against small-pox in our public schools. It seems to me that there has been a great neglect of health rules and regulations in this city for some years, and I am glad to get in communication with the State Board. I wished to explain the situation that affairs are in at this place and also to get some advice regarding this epidemic of diphtheria. Would you consider it wise to close all the schools until all danger is past or only those schools in which there are a number of cases? If at the expiration of the 30 days' notice the board of education refuse to appropriate the money for sanitary closets, is it not our duty to close the schools until sanitary closets are provided? The public sentiment is with us and prominent business men are approving of our action. Last winter we had scarlet fever and the people kept their children home from school. Now this winter it seems diphtheria is to be the cause of fear. It is also a fact that the cellars are in foul condition, are not concreted and are dark and damp in most of our schools. We have recommended these also put in sanitary shape. Some of our board of education are trying to favor the water-closet system to be put in these cellars, but it is the idea of the city engineer to have buildings constructed in the best sanitary shape outside the schoolhouse proper and built so as to have no woodwork about them and so they can be flushed every Saturday on the floors and side walls so as to keep everything absolutely clean. The closet proper to be an automatic flush, ventilated and in every way first class. What is your idea of such a place? I have written somewhat at length on the question of the schools. There are many other matters which need attention in this city, especially our sewerage system in general and the disposal of our garbage. There is no public scavenger to come twice or three times weekly

and gather up our garbage and cart it away, but each individual has it taken away when it best suits his convenience and pocket-book, or else on complaint of the neighbors, which, of course, is a very slovenly way for a city of this size to allow to continue. But as I have already written at great length, I shall defer writing of these things until another time. Thanking you for your forbearance in reading this voluminous letter, and written, as is necessary, in a hurry, I remain

Very respectfully yours,

CHARLES I. REDFIELD, M. D.,

Health officer

P. S.—I enclose report cards for the months of this year unreported, also copies of some of the city rules and regulations.

ALBANY, N. Y., October 20, 1898

C. I. REDFIELD, M. D., *Health officer, Middletown, N. Y.:*

Dear Sir.—Your communication of the 14th inst., reporting cases of contagious diseases in your city covering the period from March to September both inclusive, and referring in detail to unsanitary conditions existing in many of the public schools of the city of Middletown, has been received.

I desire on behalf of this Board to commend you for the very complete report submitted, also to express our appreciation of the intelligent work of the local board in connection with their investigations as to the sanitary condition of the various schools of the city, and their recommendations made to the school authorities looking to a betterment of certain of the schools found upon examination to be defective in sanitary appliances.

While it is not well to cause the closing of public schools except in extreme cases, it is recommended that all suspected cases of contagious diseases, also all in any way coming in contract with them, be excluded from school. This is of the first importance; diphtheria being more likely to spread from this cause than from bad or defective drainage.

Insist that conspicuously unsanitary conditions be remedied; require particularly that traps to fixtures connected with the sewers be placed in the different school buildings, and that the basements be properly ventilated. Less urgent things could be attended to later.

As the law relating to the vaccination of persons and children in attendance at the public schools is mandatory on the part of the school authorities, its enforcement should be urged by your board.

While your quarantine regulations cover the requirements of the Public health law, they are valueless unless enforced, and when violations occur, your board should not hesitate to enforce the penalties for such violations.

You say "I consider our quarantine regulation as defective inasmuch as it allows the wage earner of the family to have free access in and out of the house; in this particular they are at variance with the state law."

While the wage earner of a family is given his liberty in case of a contagious disease in the family, it is understood that in granting him such liberty, he is to use all necessary care to prevent the spread of the disease and should in no way expose himself, as his failure to take the necessary precautions would warrant your board placing him under quarantine.

In cases of diphtheria and scarlet fever, it is recommended that your board take charge of the fumigation of the premises instead of leaving it either to the attending physician or the family, and chlorine gas is suggested instead of sulphur, as being more effective.

Circulars on diphtheria and scarlet fever will be sent to you under a separate cover for distribution.

In view of the very plain statement made by the special committee of your board in connection with their recent examination of the schools, and the appreciation of the citizens of Middletown of the good work accomplished, and the necessity for the changes recommended, it would appear that the school authorities will not hesitate to at once place the schools under their charge in a sanitary condition.

Very respectfully,

T. A. STUART,

Assistant secretary

MIDDLETOWN, N. Y., December 27, 1898

BAXTER T. SMELZER, M. D., *Secretary of State Board of Health:*

My Dear Mr. Smelzer.—I desire to write you, to-day, in reference to a matter outside of the alleged shipments of carcasses affected with tuberculosis. The fact is, that I need your advice in another matter, not as district attorney of the county of Orange, but as president of the board of education of the city of Middletown. In the first place I desire to state that we have a very active and vigilant and zealous local board of health, in this city. They have served notice upon us to undertake certain sanitary work in our several schools. They first served notice on us to close the Liberty street school of this city until the same could be put in the best sanitary condition. It was claimed that certain cases of diphtheria and scarlet fever could be traced to the children who attended that school. I think myself, that this school was not in the best sanitary condition, although I have grave doubts about the children contracting these diseases there. Certain physicians of this city, state that in their opinion the building was in a sanitary condition. This school was closed two months, to the great detriment of the children attending there as well as their parents.

We expended about \$1500 in placing this school in the very best sanitary condition. They have also served notice upon us to perform similar work in three other school houses in this city. The time limit is January 3, 1899. I want to say to you that the city, to day, is as free from contagious disease as I have ever known it to be. I feel sure that not a single case of contagious disease, such as diphtheria or scarlet fever, can be traceable to any of these three school houses, and I am informed, upon good authority, that they are in good sanitary condition. The board of education has been and is now anxious and willing to co-operate in every way possible with the board of health, for the betterment of the sanitary condition of our public school buildings, but we are confronted with certain difficulties, which at present, makes it impossible for us to carry out the orders of the local board. The first great difficulty and the principal one, is that we

have no money in our treasury. As soon as we received notice from the board of health to do the work which they required, we served upon the common council of this city, the notice required by law, to raise for us sufficient funds to carry this order out. They have not as yet complied with our request. We have no funds we can use for the purposes required by the health board. The fact is, we have been compelled to put up our individual notes in order to raise money to pay teachers wages. I merely mention these facts, so that you can see how helpless we are in this matter. Of course you understand what the closing of three large public schools in this city means.

The board of education looks upon this last order of the local health board as a very arbitrary one, and one, which if carried out, will do great harm to the school children who attend these schools, and to the city at large. There are no such conditions as require such an unwarranted and arbitrary exercise of power, and we will be compelled to resist it in the courts, if you cannot help us out of this dilemma. I do not know exactly what suggestions to make to you. I have stated the facts and will ask you what can be done in the matter. We thought, perhaps, you could send some sanitary expert here at once, and have him make a full examination as to the sanitary conditions of these schools and advise us and also this local board of health, the best thing to do. I hope you will give this your immediate attention, as this order stands for the closing of the schools January the 3d next; and while I know the time is limited, I hope you will make an exception in this case, it being of so much importance to so many people.

Sincerely yours,

A. V. N. POWELSON.

President Board of education, City of Middletown, N. Y.

ALBANY, December 29, 1898

HON. A. V. N. POWELSON, *President Board of education, Middletown, N. Y.:*

Dear Sir.—I am in receipt of your communication of the 27th inst. concerning the action of the board of health of the city of

some of the heaviest taxpayers have not only given us their moral support but any other if needs be, but have taken their children from the schools and too the schools affected by our orders, the attendance has fallen to a great extent.

It has been suggested that we request the State Board to send an expert here and let the two boards stand or fall by his decision. In this we are agreed but for the fact that our orders require an outlay of nearly \$7000, and that an inspector would not only take up the plumbing matter but would go into all details such as heating, lighting, ventilation, etc. These matters we intended taking up later after we got the work done first which we deemed most important.

This is simply a digest of the matter, the interim being used by the board of education dodging the question at issue and the work is no further advanced than it was October 1st. We realize that it is quite a radical step for us to close the schools but is the only way which we had new plumbing put in the Liberty school. It is the candid opinion of the local board that the board of education do not intend to do anything until forced to by radical measures, and it is with this idea that you might give us some information on the stand we have taken that I am authorized to write you.

Trusting you may see your way clear to advise our course, I am

Yours respectfully,

FRANK W. ELLIOTT.

Clerk

ALBANY, *December 29, 1898*

Dr. C. I. REDFIELD, *Health officer, Middletown, N. Y.:*

Dear Sir—I am in receipt of a communication from the president of the board of education of your city, stating that notice has been served upon them by the local board of health to remedy certain unsanitary conditions found to exist in several of the schools of the city, the time for which is limited to January 3, 1899. .

It is stated by the president that the time specified, also the fact that no money is available for the purposes mentioned, are two factors which preclude a compliance with the orders of the local board in the time mentioned. He further questions whether the conditions, as claimed, exist.

In reply I have quoted a portion of the report made by you to this office under date of October 14, 1898, with the statement that your report would warrant the action taken by the local board, still, I would advise that ample time be given to comply with your order.

In replying to Mr. Powelson I have suggested that one of the consulting engineers of this Board will, if desired, be sent to Middletown for the purpose of investigating as to the condition of the different school buildings, and, pending such investigation, would request that your board modify its order by making the time of compliance at a date subsequent to the report of our consulting engineer.

Please submit this communication to your board and notify me as to the action taken thereon.

Very respectfully,

BAXTER T. SMELZER,

Secretary

REPORT ON MIDDLETOWN SCHOOLS

ALBANY, N. Y., January 7, 1899

To the Secretary of the State Board of Health:

Sir—During the early fall a considerable number of cases of diphtheria and scarlet fever developing in Middletown, led the city board of health to investigate the condition of the public schools, and finding some of them in an unsanitary condition, to take measures to secure their rectification, one of them being by its orders temporarily closed. The more conspicuous conditions were remedied, but the entire requirements made by the board of health were not carried out, for the reason given by the board of education of lack of funds. The board of health, by

formal order, directed the enforcement of its requirements, giving 30 days for their execution, under penalty of closure of three of the schools. Under protest of the board of education, near the end of this period, and appeal to the State Board of Health for an opinion, not, however, declining to make the required improvements, but for the reason given, asking for a reasonable extension of time, the board of health suspended its order pending an investigation which I was commissioned to make.

The schools in question are known as the Benton avenue, the Beattie hill, the Linden avenue and the Liberty street schools, and also the Truant school.

The *Liberty street school* is the one which was closed on account of the unsanitary condition of the cellar and of the closets and urinals. Evidently this was in urgent need of rectification. I found that this had been, so far as these chief points of complaint are concerned, put in good condition. The cellar, which is high and capable of good ventilation, is now cleared of all rubbish, a good concrete bottom laid, the sides and plastered ceiling whitewashed, an untrapped waste pipe trapped, and automatically flushed latrines and urinals of an approved sort put into a newly constructed outside building, an outlay of \$1500 having been made and well expended.

The *Benton avenue school* is some 20 years old, of brick, two stories, with four rooms 28 feet square on each floor, heated by steam, part direct, and a registered population of nearly 200 pupils. The average attendance for the past four months has been about 90 per cent of the registered, with little history from teachers of sickness, except from scarlet fever and diphtheria early in the fall. The pupils have an average floor space of 16 square feet, but as the doors are all wide open on corridors this is much increased and the rooms are not overcrowded. Ventilation is aimed at by one 20-inch by 20-inch register in each room connected with a shaft heated by a steam coil, but not much air is drawn up it, and the windows were two or more of them ajar. The air between 11 and 12 o'clock was somewhat heavy,

but not bad, and the pupils were alert. The lighting was insufficient, but otherwise good. The cellar is large and well lighted. It has been cleaned of rubbish; the cold-air register which traverses it has been repaired of holes. Much moisture comes through its north wall, back of which there is abrupt rise of the ground. There is no plumbing other than that necessary for drinking water pipes and the steam plant. This cellar needs draining by agricultural tile carried to an open catch basin outside, and would be further protected by a damp wall along the north side; a concrete floor should be applied. The water-closets are outside and primitive; straight hoppers carried to a trough, which must have sewer connection, and small but inefficient streams of water running constantly down each. These ought to be done away with, but there is no urgency in this, for they are not in bad condition, and can serve till spring.

The *Truant school* is a makeshift of temporary sort, though used now for two years. It contained 20 boys in a room 23 feet by 24 feet, formerly used as a store in a private building, heated by one unjacketed stove and ventilated by a transom. The occupants were not of the best class and the air was rather foul. A dark, uncleanly cellar is beneath, in which had been a water-closet, now recently removed, and a modern one placed in satisfactory location. I think this school is regarded as a temporary one; otherwise the cellar should be cleaned and ventilated and the room put in better repair.

The *Beattie hill school* is a rather old two-story four-room building of brick, with corridors traversing each floor, with no plumbing in the building. Pupils six to 10 years of age, about 200 registered, and average attendance of about 185. Being an inclement day, not a few seats were vacant in rooms of smaller children. The rooms are heated by unjacketed stoves and, the corridors being cold, doors are not wide open on them. They are thus overcrowded, having less than 15 square feet per occupant, which should be a minimum, and the air at 2.15 o'clock was heavy. The only ventilation is by windows, which were ajar. The lighting is very faulty, being by windows, on three

sides, quite narrow and small, and blackboards are between them all. The construction is good and wall colors correct. The basement is airy and has been cleaned and whitewashed, but the floor is earth, and at more than one point was standing water, the building being on a side hill and soil an impervious clay. The privies are remote from the school building, of the midden pit sort, fairly janitored, but unclean, as such places always are. They bear evidence of recent cleaning and the pits are in fair condition.

The *Linden avenue school* was built eight or 10 years ago, and, like the last noted, is a two-story brick building with a classroom 35 feet by 25 feet on either side of a corridor on each floor running the depth of the building, 35 feet by 12 feet, with doors and windows at both ends. The rooms are heated by stoves half screened by sheet-iron screens, not raised above the floor. The corridors are cold; clothes rooms, with a window but no heat, are connected with each room. The windows are, of class rooms, to the left and rear of the pupils, but are very small and inadequate; ventilation is by means of them, the doors being found closed. The color of walls and ceiling is too dark. There is a floor area of 17.5 square feet per capita of registered attendance, the average actual attendance being about 94 per cent. The cellars are cleared and cleaned, but the bottoms of bare earth and in places damp, there being an abrupt rise of ground to the rear. On this higher ground, some 30 feet distant, are the privies, which have shallow pits, now clear of contents, and a boys' urinal, which is very badly janitored, the drain from which is said to run upon adjoining property.

The *High school* building was incidentally shown, a recently constructed edifice for 300 pupils, which for beauty of design, completeness of appointments and correctness of sanitary details, is a model structure in which the city has reason to take a most justifiable pride.

Recommendations—It will be noted that the four main school buildings were all of them lacking in healthful conditions, and the board of health were justified in taking steps towards their

rectification. The board of education have not taken issue with this, and, as I have reported, have met the more conspicuous lack, especially in the Liberty street school, and have prepared plans for the more complete meeting of sanitary needs. As these relate to the basements and privies, they will, when carried out, put them into good condition, draining and concreting the former and abolishing the latter. This is very necessary, for the basements are all wet, and the city should set the example to the people of compliance with the judicious sanitary law of substituting water-closets for out-door vaults. They have gone further, by planning to substitute hot-air furnaces or steam heat for stoves, together with ventilating stacks in the three last schools, which is very desirable, for with heated corridors the ventilation can be vastly improved and the available air space increased. The Beattie hill school is especially in need of this. The lighting of the rooms ought also to be rectified very materially by change in location and size of windows, removal of objectionably placed blackboards, and in some a change in color of walls and ceiling.

The only objection raised by the board of education is to the requirement of immediate action under penalty of closing the schools, since no funds are now at their disposal for carrying them out; pending the securing these, for which immediate steps are taking, I find no necessity for action, and would recommend that the board of health be advised to suspend action.

Very respectfully,

F. C. CURTIS.

MIDDLETOWN, N. Y., *January 18, 1899*

BAXTER T. SMELZER, M. D., *Secretary of State Board of Health:*

My Dear Sir—I have the honor to acknowledge the report of Dr. Curtis, as to the sanitary condition of our public schools, which reached us a few days ago. The report was exceedingly fair and gave great satisfaction, not only to the board of education, but also to the board of health and to the patrons of our schools.

We will undertake to carry out the doctor's suggestions in every particular, as soon as we receive from the city sufficient funds for that purpose. You helped us out of a very serious embarrassment and saved the city considerable unnecessary expense. With an order staring us in the face, closing three of our public schools, without, in our opinion, any just cause for such arbitrary action, we felt it our duty to resist the same and take the matter to the courts. We were strongly advised to take this course by many good citizens, but were reluctant to do so on account of, not only the expense, but the more or less bitter feelings which such a course might engender in our little city. It was a very happy solution of the whole question which your Board submitted to us. We now feel justified in placing the schools, not only in good sanitary condition, but in the very best sanitary condition, regardless of expense.

Hoping that in all controversies, submitted for your consideration, you may be as successful in bringing about as good a state of feeling as you did here, and always believing that you will, if the good Dr. Curtis becomes the arbiter, I remain

Sincerely yours,

A. V. N. POWELSON,

President of Board of education

ALBANY, January 19, 1899

Hon. A. V. N. POWELSON, *President Board of education, Middletown, N. Y.:*

Dear Sir—We are in receipt of your communication of the 18th inst. acknowledging the receipt of a copy of the report made by Dr. F. C. Curtis upon his recent investigation as to the sanitary condition of the public schools of your city.

It is gratifying to note your statement that the board of education will carry out the recommendations made by Dr. Curtis in the matter of remedying such unsanitary conditions as were found to exist in the different school buildings; also the fact that the work of our representative has proved satisfactory to both the health and public school authorities of the city of Middletown.

Very respectfully,

T. A. STUART,

Assistant secretary

MIDDLETOWN, N. Y., *January 24, 1899*

BAXTER T. SMELZER, M. D., *Secretary State Board of Health,
Albany, N. Y.:*

Dear Sir—Complying with request of this board, I attach herewith a copy of the resolutions relating to matters concerning school properties of this city, as passed at a special meeting held January 17, 1899.

Kindly acknowledge receipt.

Yours respectfully,

FRANK W. ELLIOTT,

Clerk

MIDDLETOWN, N. Y., *January 17, 1899*

WHEREAS, The board of education having appealed to the State Board of Health for a thorough and careful examination of the school properties condemned by the board of health of this city, as being in an unsanitary condition, and Dr. F. C. Curtis, the sanitary expert of the State Board of Health, having made such examination of the Benton avenue, Beattie hill, Linden avenue and Truant school properties, and whose report confirms in every particular the facts as set forth by this board regarding the unsanitary and unhealthful conditions of the above named school properties and, further states, "the local board of health were justified in taking steps toward their rectification;"

WHEREAS, The board of education having shown to the satisfaction of the State Board of Health their intentions to carry into effect the repairs ordered by this board, as soon as funds can be secured, which they have said will be at the earliest practicable moment; therefore, be it

Resolved, That, as the board of education have thus faithfully promised to carry into effect the orders of this board of health, as soon as such funds can be secured, which this board deems should not be later than April 1, 1899; be it further

Resolved, That this board accede to the recommendation of the State Board of Health and suspend action to the date above mentioned; that a copy of this resolution be forwarded to the State Board of Health and a copy to the board of education.

ALBANY, N. Y., *January 25, 1899*

FRANK W. ELLIOTT, *Clerk Board of health, Middletown, N. Y.:*

Dear Sir—I am in receipt of your communication of the 24th inst. enclosing a copy of the resolutions adopted by the board of health of the city of Middletown, concerning the school properties of that city.

Very respectfully,

BAXTER T. SMELZER,

Secretary

VIOLATIONS OF RULES AND REGULATIONS

MADE FOR THE

**SANITARY PROTECTION OF PUBLIC
WATER SUPPLIES**

VILLAGE OF PORT JERVIS

PORT JERVIS, N. Y., December 24, 1897

State Board of Health:

Gentlemen.—On behalf of the Port Jervis Water Works Company and at their request I inform you that one Charles Coddington of this place violates the regulations lately made by you for the protection from contamination of the potable water supply of the village of Port Jervis.

The water company have caused to be served on him a notice to comply therewith but he pays no attention to it.

They now notify you in pursuance of the statute in order that you may examine into such violation.

Very truly,

C. E. CUDDEBACK,

Port Jervis attorney for Water Co.

ALBANY, N. Y., January 3, 1898

C. E. CUDDEBACK, *Attorney for Port Jervis Water Co., Port Jervis, N. Y.:*

Dear Sir. -Your communication of the 24th ultimo giving notice of the alleged violation by Charles Coddington of rules made by this Board for the sanitary protection of the water supply of the village of Port Jervis, and requesting that an examination be made by this department, has been received.

In reply you are informed that a representative of this Board will visit Port Jervis within a short time to investigate the complaint made by the Port Jervis Water Co.

Very respectfully,

BAXTER T. SMELZER,

Secretary

To Charles Ooddington:

Take notice that at a meeting of the State Board of Health held at Buffalo, N. Y., August 19, 1897, were made, ordained and established, "Rules and regulations for the protection from contamination of the public supply of potable waters and their sources for the village of Port Jervis, N. Y."

That such rules and regulations have been published as required by law, and together with due proof of such publication have been filed in the office of the clerk of the county of Orange.

Also take notice that the following is a copy of section 10 of such rules and regulations, to wit:

MANURES, COMPOSTS AND SIMILAR MATTERS

"10. No stable, cattle pen, pig-sty, hen house, stable-yard, barn-yard, hog pen, duck-yard, hitching or standing place for horses and cattle, nor any compost or manure heap nor other place where animal manure accumulates shall be located or maintained within 100 feet of any reservoir, spring, stream, ditch or water course aforesaid. These and also watering places for horses, or cattle or other animals must be so arranged that the polluted drainings therefrom shall not flow into any such reservoirs, springs, streams, ditches or water courses without having undergone proper purification. Such drainings shall not be allowed to flow through open or covered drains nearer than 50 feet of the high water mark or precipitous bank of any reservoir, spring, stream, ditch or water course as aforesaid without having undergone proper purification."

That the Port Jervis Water Works Company have caused an inspection to be made of your premises near the head of their distributing reservoir; that such inspection has disclosed a violation of section 10 of such rules and regulations; and that you are required immediately to comply with the same.

Dated Port Jervis, December 17, 1897.

By order of

THE PORT JERVIS WATER WORKS CO.

By PETER E. FARNUM,

President Port Jervis Water Works Co.

PORT JERVIS, N. Y., *January 22, 1898*

M. J. DONOVAN, *Attorney:*

Dear Sir.—As I understand that you represent both the owner and occupant of the O'Gorman property and in view of our recent conversation I have thought proper to write you before any further action is taken by the Port Jervis Water Works Company respecting the nuisance at the head of their reservoir.

As I am informed provided a shed be built in the barn-yard where the manure pile now is, so that the manure may not become wet from the rains; also the water flowing down from the hill be diverted or led in a pipe or covered ditch so that it will not flow over the surface through the barn-yard; the barn yard itself be graded so that its slope would be away from and not toward the ditch now leading to the reservoir, and the pig pen removed to the northerly side of the barn or to some other location at least 100 feet from the ditch, sanitary requirements would be sufficiently complied with.

The water works company stands ready at its own expense to make these changes and improvements in order that the end sought may be attained, and with the owner's consent will do so, or it will pay the costs thereof provided it be first furnished with a specification of the work to be done within the limits above defined, and the price is reasonable.

I should be pleased to hear from you as soon as you have consulted with your principals respecting the matter and am of the opinion that an arrangement as proposed would be advantageous both to them and to my client.

Very truly yours,

C. E. CUDDERBACK

Attorney for Port Jervis Water Works Co.

PORT JERVIS, N. Y., *June 4, 1897*

At a regular meeting of the town board of health held on the day of the above date the following business was transacted.

Members present: Supervisor T. J. Quick, Justice J. J. Bross, Justice W. H. Shaw, Justice R. W. Carr, Justice J. N. Case, Citizen member B. S. Marsh, Health physician C. N. Knapp.

The following complaints were read.

One from the Port Jervis Water Works Company, of a nuisance on the farm of Bernard O'Gorman occupied by Mr. Coddington; the said nuisance consisting of a pig pen so situated as to permit the impurities arising to flow in said company's reservoir.

Dr. C. N. Knapp, health physician, made the following report.

PORT JERVIS, N. Y., *June 4, 1897*

Town Board of Health, Town of Decrpark:

Gentlemen—I have investigated the complaint of the Port Jervis Water Works Company, of a nuisance on the farm of Bernard O'Gorman, and find the complaint to be a just one and it should be abated.

Very truly yours,

C. N. KNAPP

Motion made and seconded that the clerk be authorized to notify Rev. E. J. O'Gorman, the owner, and Mr. Coddington, the occupant, of a complaint to the town board of health in regard to a nuisance consisting of a pig pen on said premises and the said nuisance to be removed within 10 days from time of notice under the penalty of the law. Carried.

PORT JERVIS, N. Y., *June 14, 1897*

At a special meeting of the town board of health held on day of above date, the following business was transacted.

Members present: Supervisor T. J. Quick, Justice J. J. Bross, Justice W. H. Shaw, Justice J. N. Case, Justice R. W. Carr, Health physician C. N. Knapp, Citizen member B. S. Marsh.

The following gentlemen also appeared before the board.

Rev. E. J. O'Gorman of New York city, Mr. P. E. Farnum, representing the Port Jervis Water Works Company, Mr. E. Coddington, tenant of Rev. E. J. O'Gorman.

After the complaint of the Port Jervis Water Works Company had been fully considered the following resolution was proposed.

Resolved, That the complaint of the Port Jervis Water Works Company with reference to an alleged nuisance on the farm of Rev. E. J. O'Gorman in the town of Deerpark made to the town board of health of the town of Deerpark, be respectfully referred back to said company for action on the same, on the ground that under section 72 of article 5 of chapter 25 of the general laws of the State of New York, known as the Public health law, a remedy is provided for the abatement of such nuisance by the corporation owning or operating such water works and this board has no jurisdiction in the premises. Carried.

I hereby certify that the foregoing is a true transcript from the minutes of a regular and special meeting of the town board of health of the town of Deerpark, held June 4, 1897, and June 14, 1897, respectively.

Dated PORT JERVIS, N. Y., *January 22, 1898.*

W. S. EVANS,

Town clerk

ALBANY, *February 22, 1898*

Dr. BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—Agreeable to your instructions of January 20th, I visited the village of Port Jervis, N. Y., on January 22d, for the purpose of looking into the alleged violation of the rules and regulations enacted for the protection of the water supply of Port Jervis by the State Board of Health, August, 1897.

Upon examination of the farm in premises belonging to Rev. O'Gorman of New York and occupied by Charles Coddington, I found the facts to be that a barn-yard, hog-pen and stable were in close proximity to a water course running directly into the reservoir of the Port Jervis Water Company, also that as managed at the present the barn-yard and hog-pen would actually pollute the water supply in the reservoir. I found however that neither the owner nor tenant had been notified of the readiness of the water company to assume the expense of the changes necessary to be made in order to stop the pollution.

On my suggestion, the attorney of the water company submitted on January 22d a formal offer to the owner and tenant to make the necessary changes and improvements without expense to the owner or tenant or to meet the expenses of such changes provided they were made in accordance with specification to be submitted by the water company. A copy of this proposition is herewith submitted. Since returning from Port Jervis, I have received a letter from the attorney of the water company stating that the attorney for Rev. O'Gorman had expressed his willingness to allow the water company to make the changes needed. A copy of this letter is also enclosed.

It would appear, therefore, that the matter is now in a way to be finally settled without further action by the State Board of Health.

I enclose also copy of minutes of the town board of health of Port Jervis of June 4th, and of June 14th, which are needful to make the instance complete.

I am, dear sir,

Very truly yours,

OLIN H. LANDRETH,

Consulting engineer

WATER SUPPLY OF THE CITY OF UTICA

SCHENECTADY, N. Y., *March 14, 1898*

Hon. C. W. ADAMS, *Chairman drainage committee, State Board of Health, Albany, N. Y.:*

Dear Sir—I beg to report that I visited on Saturday the 12th inst. the water-shed of the water supply of the water works company of Utica, N. Y., for the purpose of investigating the alleged violation of rule No. 10 of the rules and regulations for the protection of this water supply passed and enacted by the State Board of Health during the summer of 1896.

The circumstances so far as they bear on the violation are as follows: About two-thirds of the population of the city of Utica are furnished with water by the Utica Water Works Company, the only corporation delivering water; the remaining one-third of the population being supplied by private wells. The supply for this company's system is derived from impounding reservoirs situated southeast of the city, from which the water flows by gravity to distributing reservoirs nearer the city to which in turn it is delivered by gravity. About three-fourths of the drainage area of the impounding reservoirs is cultivated land and the remainder brush and forest land. To protect the water supply from the organic pollution incident to the ordinary drainage from such cultivated areas, the water company applied for the passage of rules and regulations to be enacted by the State Board of Health; these rules were enacted by the board at a meeting on July 23, 1896, and were duly filed with the county clerks of both Herkimer and Oneida counties, as the drainage area lies in both counties. Rule No. 10 of this code reads as follows:

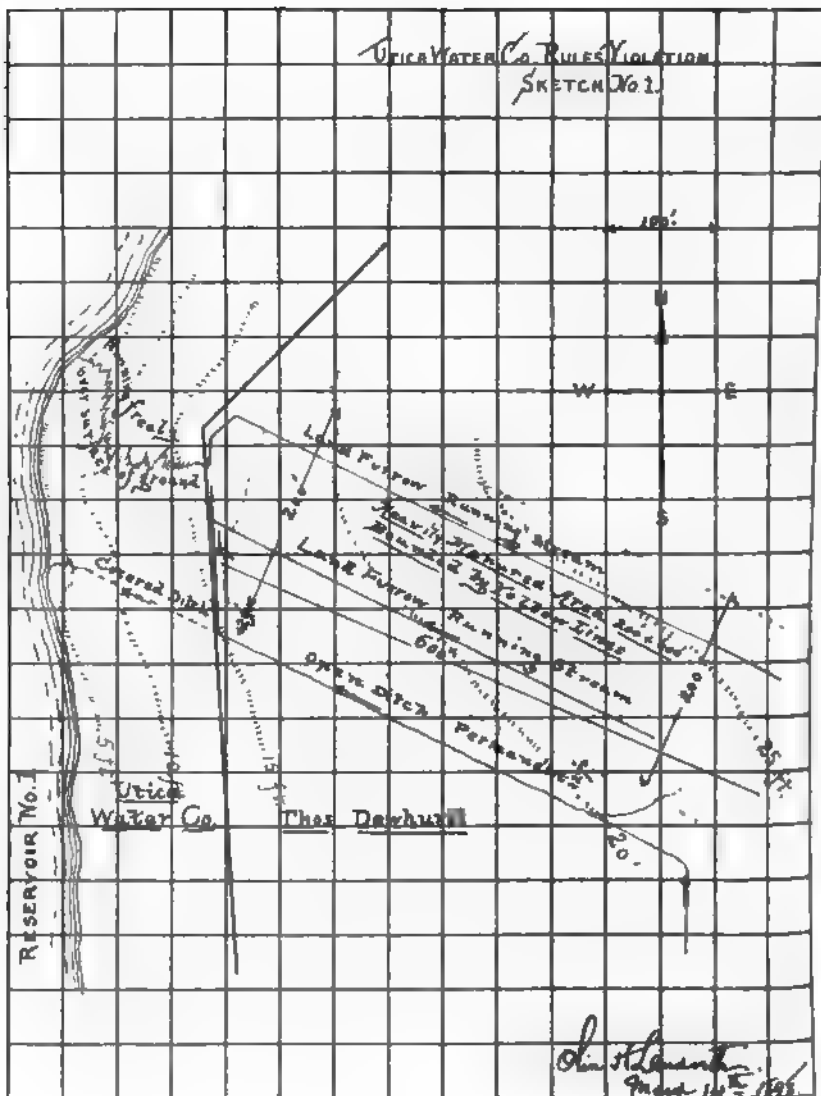
"Tenth. No human excreta or compost containing human excreta shall be spread upon the ground within two hundred and fifty (250) feet, horizontal measurement, of the high water line of any reservoir or pond, nor within one hundred and thirty (130) feet horizontal measurement, of the edge, margin or precipitous bank of any spring, stream, ditch, gutter, or other watercourse aforesaid, and no manures or composts of any kind shall be spread or deposited so as to be washed a less distance than fifty (50) feet over the surface or through the soil before reaching the nearest point of the aforesaid watercourse."

The violation alleged by the water company relates to the latter clause of the above rule. The more remote and the higher of the impounding reservoirs, called "No. 1," is situated in the town of Frankfort, Herkimer county, though the distributing reservoirs and the distribution system, into which the water from this reservoir No. 1 flows, are in Oneida county. On the east side of reservoir No. 1 the water company's line is about 150 feet from the high-water line of the reservoir and runs northerly for a con-

siderable distance and then northeasterly; the land east of the boundary is owned and occupied by Mr. Thomas Dewhurst, who cultivates the land for farming purposes. The land slopes gently from the ridge in this field toward the reservoir, the surface of water in which is about 25 feet below the ridge or crest of the land near the reservoir; this field is drained by a well-defined permanent ditch running across the field northwesterly, thence across the strip of land belonging to the water company through a covered ditch and into the reservoir. This ditch receives the drainage from a number of smaller ditches and furrows plowed out each time the land is plowed. A long strip of land about 600 feet long measured parallel with the main ditch and 200 feet wide was during the past winter spread heavily with barnyard manure; this strip is on the upper side of this ditch and comes within 29 feet of the main ditch and 26 feet from a small secondary ditch which runs along parallel with the main ditch and enters it at the boundary fence. A well-defined land-furrow runs parallel with the main ditch and 88 feet from it on the upper side, this enters the main ditch by first flowing into the end-furrow along the boundary fence. Another land-furrow about 90 feet further up flows parallel with the main ditch, but enters the reservoir directly by flowing over the ground surface after reaching the boundary fence.

In both these furrows there was a strong stream of water flowing when I examined the field; these furrows both passed directly through the manured part of the field and directly into the reservoir; the purification which the water in the last mentioned furrow received by flowing over the surface of the ground hardly amounts to more than a straining out of the floating matter and only the coarser part of that. In my opinion these three ditches, viz.: The main ditch and the two land-furrows are "water-courses" within the meaning of the rules and regulation of the State Board of Health quoted above, inasmuch as they form a definite, direct channel through which water flows in considerable quantities whenever any drainage runs off the land and in passing along which there can be little or no cleansing or purification of the water.

UTICA WATER CO. RULES VIOLATION
SKETCH No. 1.



Jim H. H. H.
9th Dec 1915

I beg to report, therefore, that, in my opinion, Rule No. 10 enacted by the State Board of Health for the protection of this water supply is being violated by the owner of the land in question in thus spreading manure on the land within the minimum distance prescribed.

The appended sketch shows the situation at the place where the violation occurs.

Although bearing only indirectly on the case in question, it may not be out of place to state that my examination of the drainage area of the water works company reservoirs showed that the company is using great effort to maintain the water stored in their reservoirs at as high a state of purity as possible. The company, since the enactment of the rules by the State Board of Health, has at three farm premises put in at its own expense liquid manure tanks and drains to catch the drainage from barnyards and furnishes the farmers a part of the labor of emptying these by carting the contents on to the land whenever full. In this way over 400 barrels of liquid manure per month have been kept out of the stream entering the reservoir and returned to the land at places where it cannot flow into the streams again. At one farm \$1000 has recently been expended by the company in properly underdraining, grading and banking the barnyard and building underground tanks. Over \$2,000 is said to have been expended by the company during the past two years in similar improvements to make possible a greater degree of purity. All of the privies on the drainage area that are near water courses have been provided with tight removable boxes and are emptied under the direction of the company's inspector who is maintained constantly on patrol. Under these conditions violations such as the one here reported become relatively more important and less readily overlooked.

I am, dear sir, very truly yours,

OLIN H. LANDRETH,

Consulting engineer

UTICA, N. Y., *February 22, 1898*

THOS. DEWHURST, *Frankfort, Oneida co. N. Y.:*

Dear Sir—By virtue of the authority vested in me as inspector of the State Board of Health, I hereby notify you that you are violating Rule No. 10 of the rules and regulations for the sanitary protection of the public water supply of the city of Utica.

If the nuisance on your premises is not abated and all cause of complaint removed within 10 days after the date of this notification, I shall be obliged to refer the matter to the State Board for further action.

A printed copy of the rule you are violating is attached to this notification, in pursuance of the laws of New York, chapter 661, article 5, sections 70 and 71.

GEORGE C. HODGES,

Inspector of the State Board of Health

(Copy of notice served on Thomas Dewhurst on February 22, 1898.)

**Rules and Regulations for the Sanitary Protection of the Public
Water Supply of Utica, N. Y.**

**PRIVIES ADJACENT TO RESERVOIRS, PONDS, SPRINGS
OR WATER COURSES**

First—No privy or place for the deposit, reception or storage of human excreta shall be constructed, located or maintained within 50 feet, horizontal measurement, of the high water mark of any pond or reservoir, or the edge, margin or precipitous bank

of any spring, stream, ditch, gutter or water course of any kind, the water of which, when running, flows eventually into a reservoir of the public water supply of Utica, N. Y.

Second—No privy vault, pit or cesspool, or other non-transportable receptacle of any kind, used for the deposit, reception or storage of human excreta shall be constructed, located or maintained within 300 feet, horizontal measurement, of the high water mark of any pond or reservoir, or within 130 feet, horizontal measurement, of the edge, margin or precipitous bank of any spring, stream, ditch, gutter or water course of any kind, the water of which, when running, flows eventually into any reservoir of the public water supply of Utica, N. Y.

Third—Every privy or place for the deposit, reception or storage of human excreta which is constructed, located or maintained between the aforesaid limits of 50 feet, and 300 feet, horizontal measurement, of the high water mark of any pond or reservoir, or between the aforesaid limits of 50 feet and 130 feet, horizontal measurement, of the edge, margin or precipitous bank of any spring, stream, ditch, gutter or water course aforesaid, and from which privy the excreta are not at once removed automatically, by means of suitable watertight pipes or conduits to some proper place of ultimate disposal as hereinafter provided, shall be arranged in such manner that all said excreta shall be received and temporarily maintained in suitable vessels or receptacles, which shall be at all times maintained in an absolutely watertight condition, and which will permit of convenient removal to some place of ultimate disposal as hereinafter set forth.

Fourth—The excreta collected in the aforesaid removal receptacles shall be removed, and the receptacles cleansed and deodorized as often as may be found necessary to maintain the privy in proper sanitary condition, and to effectually and strictly prevent any overflow upon the soil or upon the foundation or floor of the privy.

In effecting this removal, the utmost care shall be exercised, that none of the contents be allowed to escape while being transferred from the privy to the place of disposal hereinafter speci-

fied, and that the least possible annoyance or inconvenience be caused to occupants of the premises or of the adjoining premises.

Fifth—Unless otherwise specifically ordered or permitted by the State Board of Health, the excreta collected in the aforesaid receptacles shall, when removed, be disposed of by burying in trenches or by thoroughly digging into the soil at such places and in such manner as to effectually prevent them being washed over the surface of the ground by rain or melting snow, and at distances not less than 500 feet, horizontal measurement, from the high water mark of any pond or reservoir, and not less than 300 feet, horizontal measurement, from the edge, margin or precipitous bank of any spring, stream, ditch, gutter or water course of any kind, the water of which, when running, flows into a reservoir of the public water supply of the city of Utica, N. Y.

Sixth—Whenever it shall be found that, owing to the character of the soil or of the surface of the ground, or to the height or flow of subsoil water, or other special local condition, the excremental matter from any privy or aforesaid receptacle, or from any trench or place of disposal, may, in the opinion of the State Board of Health, be washed over the surface of the ground, or through the soil into any pond, reservoir, stream, spring, ditch, gutter or other water course tributary to the aforesaid public water supply, then the said privy or receptacle for excreta or trench or place of disposal, shall, after due notice to the owner thereof, be removed to such greater distance, or to such places as shall be considered safe and proper by the State Board of Health.

HOUSE SLOPS, SINK WASTE, LAUNDRY WATER, GARBAGE, REFUSE, ETC.

Seventh—No sewage, garbage, putrescible matter, house slops, sink waste, water in which milk cans, clothes or bedding have been washed or rinsed, nor any polluted water or liquid shall be thrown or discharged directly into any pond, reservoir, spring, stream, ditch, gutter or other water course aforesaid, nor shall any such liquid or solid matter be thrown or discharged upon the

surface of the ground or into the ground below the surface in any manner whereby the same may flow into any reservoir, pond, spring, stream, ditch, gutter or other water course aforesaid, within 50 feet, horizontal measurement, of the high water mark, edge, margin or precipitous bank of any pond, reservoir, spring, stream, ditch, gutter or other water course aforesaid.

Eighth -No clothing, animals, vehicles or anything which pollutes water shall be washed in nor shall any person bathe in any pond, reservoir, spring, stream, ditch, gutter or other water course aforesaid.

MANURES, COMPOSTS, ETC.

Ninth--No stable, cattle pen, pig sty, hen house, barn yard, hog yard, poultry yard, hitching place or standing place for horses or other animals, and no manure pile, compost heap, piles of fermented or decayed fruit, vegetables, roots, grain, sawdust, leaves or other vegetable substances shall be located, maintained or allowed to remain in such place or manner that the washings or drainage therefrom may flow by opened or covered drains or channels into any pond, reservoir, spring, stream, ditch, gutter or other water course aforesaid, without first having passed over or through such amount of soil as to have become properly purified, and in no case shall the distance from such stable, cattle pen, etc., to the high water mark of such pond or reservoir be less than 100 feet, horizontal measurement, nor the distance from such stable, cattle pen, etc., to the edge, margin or precipitous bank of such spring, stream, ditch, gutter or other water course be less than 50 feet horizontal measurement.

Tenth No human excreta or compost containing human excreta shall be spread upon the ground within 250 feet, horizontal measurement, of the high water line of any pond or reservoir, nor within 130 feet, horizontal measurement, of the edge, margin or precipitous bank of any spring, stream, ditch, gutter or other water course aforesaid, and no manures or composts of any kind shall be spread or deposited so as to be washed a less distance than 50 feet over the surface or through the soil before reaching the nearest point of the aforesaid water course.

DEAD ANIMALS, MANUFACTURING WASTE, ETC.

Eleventh—No dead animal, bird, nor fish, nor part thereof, nor any putrescible matter, or polluted water from any slaughter house, dairy, creamery, cheese factory, cider mill or other manufactory shall be thrown or allowed to run into any pond, reservoir, spring, stream, ditch, gutter or water course aforesaid, nor shall they be so deposited that any portion thereof, or of the polluted drainage therefrom shall be washed over the surface or through the soil a less distance than 100 feet before reaching the nearest point of the aforesaid water course.

MANAGEMENT OF RESERVOIRS, WASHOFF OF THE GROUND, ETC.

Twelfth—The distributing reservoirs of the public water supply of the city of Utica shall not be drawn down to such a level as to expose a large area of previously submerged surface during the three summer months, unless the same become necessary for the removal of vegetable growths or other accumulations, and during these months the depth of water over such surfaces shall be maintained as great as is possible.

Thirteenth—The water coming from the first rainfall of any shower or storm shall not be admitted into the distributing reservoir of the public water supply of the city of Utica, nor shall such water be admitted until the surface of the land forming the drainage area tributary to the reservoir has become cleansed of a large proportion of the organic impurities formed or deposited on such drainage area.

Fourteenth—No screen or filter shall be used in connection with any reservoir aforesaid while in a filthy condition, and no screen or filter shall be used in connection with such reservoirs which is not susceptible of constant and ready examination and cleansing.

PENALTY

In accordance with section 70 of chapter 661 of the Laws of 1893, a penalty of not to exceed \$200 is hereby imposed upon

any corporation, persons or person guilty of a violation, or non-compliance with any of the above given mandatory rules and regulations, to be recovered under said act.

At a meeting of the State Board of Health, held on the 23d day of July, 1896, at the Humphrey house, Jamestown, N. Y., the foregoing rules and regulations were made, ordained and established, pursuant to chapter 661 of the Laws of 1893, for the sanitary protection of the reservoirs and tributaries thereto of the water supply of the city of Utica.

DANIEL LEWIS,
President

BAXTER T. SMELZER, M. D.,
Secretary and executive officer.

COUNTY OF HERKIMER, }
STATE OF NEW YORK, } ss.:

I, Garry A. Willard, clerk of said county, and of the Supreme and County courts therein, the same being courts of record, do hereby certify, that I have compared the annexed copy of rules and regulations for sanitary protection and the endorsements thereupon with the original thereof, on file in this office, and that the same is a correct transcript therefrom, and of the whole of said original.

In witness whereof, I have hereunto set my hand, affixed
[L. s.] the seal of said county and courts, at the city of
Utica, this 10th day of November, 1896.

GEO. D. FRANK,
Deputy clerk

ONEIDA COUNTY CLERK'S OFFICE, }
STATE OF NEW YORK, } ss.:

Philip H. Brown, of Herkimer, N. Y., being duly sworn, deposes and says that he is the county clerk of Herkimer county; that on the 9th day of November, 1896, there was filed in the

Herkimer county clerk's office an original copy of the "Rules and Regulations for the Sanitary Protection of the Public Water Supply of Utica, N. Y."

[L. s.]

PHILIP H. BROWN,
Clerk

Subscribed and sworn to before me this
twenty-fifth day of November, 1896,

R. R. WOOD,
Notary public, in and for Herkimer County, N. Y.

LAWS OF NEW YORK, CHAPTER 661, ARTICLE 1,
SECTION 4

GENERAL POWERS AND DUTIES OF STATE BOARD OF HEALTH.

Every member of such State Board and every person authorized by it so to do, may without fee or hindrance, enter, examine, and survey all grounds, erections, vehicles, structures, apartments, buildings and places.

ALBANY, *April 14, 1898*

C. I. SEAMAN, *President Board of health, town of Frankfort, Frankfort, N. Y.:*

Dear Sir—This Board having been notified by the Utica Water Works Company, that one Thomas Dewhurst, residing in the town of Frankfort, was violating rule No. 10 of the rules and regulations made by the State Board of Health for the sanitary protection of the water supply of the city of Utica, which is as follows:

"Tenth. No human excreta or compost containing human excreta shall be spread upon the ground within two hundred and fifty (250) feet, horizontal measurement, of the high water line of any reservoir or pond, nor within one hundred and thirty (130) feet, horizontal measurement, of the edge, margin or precipitous bank of any spring, stream, ditch, gutter, or other water course aforesaid, and no manure or composts of any kind shall be spread or deposited so as to be washed a less distance than fifty (50) feet over the surface or through the soil before reaching the nearest point of the aforesaid water course."

Prof. Olin H. Landreth, who was authorized to investigate the complaint, reports as follows:

"The violation alleged by the water company relates to the latter clause of the above rule;" (Rule 10) "The more remote and the higher of the impounding reservoirs, called 'No. 1,' is situated in the town of Frankfort, Herkimer county, though the distributing reservoirs and the distribution system, into which the water from this reservoir, No. 1, flows, are in Oneida county. On the east side of reservoir No. 1, the water works company's line is about 150 feet from the high water line of the reservoir and runs northerly for a considerable distance and then north-easterly; the land east of the boundary is owned and occupied by Mr. Thomas Dewhurst, who cultivates the land for farming purposes. The land slopes gently from the ridge in this field toward the reservoir, the surface of water in which is about 25 feet below the ridge or crest of the land near the reservoir; this field is drained by a well-defined permanent ditch running across the field northwesterly, thence across the strip of land belonging to the water company through a covered ditch and into the reservoir. This ditch receives the drainage from a number of smaller ditches and furrows plowed out each time the land is plowed. A long strip of land about 600 feet long measured parallel with the main ditch and 200 feet wide was during the past winter spread heavily with barn-yard manure; this strip is on the upper side of this ditch and comes within 29 feet of the main ditch and 26 feet from the small secondary ditch, which runs along parallel with the main ditch and enters it at the boundary fence. A well-defined land-furrow runs parallel with the main ditch and 88 feet from it on the upper side; this enters the main ditch by first flowing into the end furrow along the boundary fence; another land-furrow about 90 feet further up flows parallel with the main ditch, but enters the reservoir directly by flowing over the ground surface after reaching the boundary fence.

"In both these furrows there was a strong stream of water flowing when I examined the field; these furrows both passed

directly through the manured part of the field and directly into the reservoir; the purification which the water in the last mentioned furrow received by flowing over the surface of the ground hardly amounts to more than a straining out of the floating matter and only the coarser part of that.

“In my opinion these three ditches, viz., the main ditch and the two land-furrows are ‘water courses’ within the meaning of the rule and regulation of the State Board of Health quoted above, “(Rule 10)” inasmuch as they form a definite, direct channel through which water flows in considerable quantities whenever any drainage runs off the land and in passing along which there can be little or no cleansing or purification of the water.

“I beg to report, therefore, that, in my opinion, Rule No. 10, enacted by the State Board of Health for the protection of this water supply, is being violated by the owner of the land in question in thus spreading manure on the land within the minimum distance prescribed.”

The report of Professor Landreth, showing that Mr. Thomas Dewhurst is, as alleged by the Utica Water Works Company, violating Rule No. 10 of this Board, I hereby direct you, under the authority given to me by section 71 of chapter 661 of the Laws of 1893, to convene the board of health of the town of Frankfort, for the purpose of enforcing obedience on the part of the said Thomas Dewhurst, to the rules made by the State Board of Health, for the sanitary protection of the water supply of the city of Utica.

Very respectfully,

BAXTER T. SMELZER,

Secretary

FRANKFORT, N. Y., April 26, 1898

BAXTER T. SMELZER:

Dear Sir—In answer to yours of the 23d inst., I would say that the authorized representatives of the board of health of Frankfort did, on the 22d inst., visit the premises of Thomas Dewhurst, investigated the cause of the complaint heretofore made to me

by the State Board, and finding that there was just cause for such complaint, caused a notice to be served on Mr. Dewhurst, a copy of which is enclosed. This was served by the subscriber April 22, 1898.

Respectfully yours,

G. I. SEAMAN

THOMAS DEWHURST, *Frankfort, N. Y.:*

Dear Sir—Complaint of a serious nature has been made to the board of health of the town of Frankfort, through its supervisor, by the State Board, and which latter authority directs the local board of the town of Frankfort to proceed at once, if such violation of law exists, to enforce obedience of the law with reference to the same.

The complaint made to this board says, substantially, among other things, that during the past winter a long strip of land owned or occupied by you, about 600 feet long, was heavily spread with barn yard manure; that there are, or has been, several furrows passing through this manured land and that a large amount of water flows, or has hitherto flowed directly into the reservoir from which the city of Utica obtains its supply of water; that the water in these furrows, and which flows into said reservoir, in running over and through the same amounts to no more than a straining out of the floating matter, and only the coarser part of that.

It is the decision of the State Board that these ditches are "water courses" within the meaning of the law, carrying impure water into said reservoir and that for the protection of the water supply the rule governing the same is being violated by you, and that the same result at once cease.

The undersigned, by authority of the local board of health of the town of Frankfort, having visited the premises where such violations are said to exist, or have heretofore existed, and having made careful inquiry and examination of the same, and used due care and diligence with reference to the same, do hereby concur with the State Board of Health, that the ditches or fur-

rows running over or through the land so manured are, or have heretofore been, in law "water courses," and that the water flowing through them is impure, caused by such manure drawn on the premises as aforesaid and liable to endanger the health of the public, the same is declared by the undersigned the representatives of the board of health of the town of Frankfort, as a nuisance and respectfully insist that the same be at once abated.

G. I. SEAMAN,

Supervisor

H. A. TINE,

Citizen member

H. H. INGHAM,

Member of board

(Copy of above served personally on Thomas Dewhurst by G. I. Seaman, supervisor, April 22, 1898.)

ALBANY, April 27, 1898

G. I. SEAMAN, *President Board of health, Frankfort, N. Y.:*

Dear Sir—I am in receipt of your communication of the 26th inst. enclosing copy of an order made by the board of health of the town of Frankfort, and served on Mr. Thomas Dewhurst, in the matter of the violation by him of rules made by this board for the sanitary protection of the water supply of the city of Utica.

Very respectfully,

BAXTER T. SMELZER,

Secretary

BOROUGH OF BROOKLYN

Violations of rules for sanitary protection of water supply

New York, May 19, 1898

BAXTER T. SMELZER, *Secretary State Board of Health, Albany,
N. Y.:*

Dear Sir—I have the honor to enclose herewith a report and detailed specifications of nuisances existing in the watershed from which the borough (late city) of Brooklyn derives its water supply, and which tend to the pollution of the water.

I respectfully ask the consideration of your Board in this matter and definite instructions as to what action this department should take to eradicate the nuisances and prevent contamination of the water supply.

Attached to the report you will also find a copy of a letter, dated April 9, 1897, from the corporation counsel of Brooklyn to the mayor of Brooklyn, giving instructions as to the course to be taken for the abatement of the nuisances, which instructions have been carried out to the extent of serving notices on the owners of premises where the nuisances exist.

The early action of your Board in this matter will oblige,

Yours very respectfully,

WM. DALTON,

Commissioner of water supply

BROOKLYN, N. Y., April 27, 1898

ROBERT VAN BUREN, *Engineer in charge:*

Dear Sir—I enclose herewith a list of nuisances on our watershed, located along Valley stream. Pines pond and brook, Scho-dack brook, East Meadow brooks, Millburn stream and pond, New-bridge stream, Wantagh ponds and stream, and Simonson's pond and stream.

To abate these nuisances, and in accordance with the directions contained in the advisory communication sent to the mayor by the corporation counsel on April 9, 1897, copy of which is enclosed, I have served notices upon the owners and occupants, showing the particulars wherein they are violating the rules and regulations of the State Board of Health, together with copy of said rules and regulations. In most of the cases the notice was served early in November of last year, since which date inspections have been made at frequent intervals to ascertain if any of the nuisances had been removed by the owner or occupant of the premises. The last inspection, as shown in the statement, was made during the latter portion of last month.

I have directed Assistant engineer Geo. S. Skilton to see that the nuisances reported on the city property at Old Anderson's mill on the East Meadow brook is properly taken care of.

I beg to recommend that in accordance with the advices of the ex-corporation counsel, a communication relating to the conditions on all of these streams be at once forwarded to the State Board of Health.

Respectfully,

I. M. DE VARONA,

Engineer of water supply

[Copy]

BROOKLYN, April 9, 1897

HON. FREDERICK W. WURSTER, *Mayor*:

Dear Sir.—I advise the following as the course to be taken for the purpose of abating the alleged nuisances, which, it is claimed, are a source of contamination to the Springfield pond and its feeders:

1 The commissioner of city works should cause to be served upon each of the persons maintaining the nuisances a copy of the regulations of the State Board of Health established "For the sanitary protection of so much of the potable waters of the counties of Kings, Queens and Suffolk as are now used for the supply of water for the city of Brooklyn," adopted July 31, 1894, together with a notice that such regulations are being violated by the person so served.

2 If the person so served does not immediately comply with the regulation which the notice states to be violated the commissioner of city works should so notify the State Board of Health.

3 It will thereupon become the duty of the State Board to examine into the matters alleged in the notification given by the commissioner.

4 If the State Board shall find that the regulation referred to is being violated, the secretary of the State Board will order the health commissioner of the city of Brooklyn to enforce obedience to the regulation in question.

5 If the health commissioner fails so to enforce obedience within 10 days thereafter, actions should be brought by the city for injunctions restraining the continued violation of such regulation.

Yours respectfully,

JOSEPH A. BURR,

Corporation counsel

[Copy]

LETTER TO OWNER OR TENANT OF PREMISES

Dear Sir—The commissioner of city works of the city of Brooklyn hereby gives you notice that you are violating the rules and regulations of the State Board of Health adopted July 31, 1894 (a copy of which accompanies this notice), on the property (owned, or occupied) by you (near the stream, or pond, or adjoining the stream, or pond) by constructing (or maintaining) thereon, within the limits prescribed by said rules and regulations (description of nuisance), thereby causing a nuisance, and the pollution of the water supply of the city of Brooklyn, which nuisance you are hereby notified to abate.

Respectfully,

I. M. DE VARONA,

Engineer water supply

GEORGE S. SKILTON,

Assistant engineer P. and W.

LIST OF NUISANCES ON WATERSHED

VALLEY STREAM

1 Julius Gutsche, owner:

Property on east branch south of the Merrick road. Nuisance consists of barn, with pigs, chicken house and yard; open ditch leads from yard to stream. Privy is 28 feet from ditch. Served with official notice November 12, 1897. In compliance with same the ditch has been filled within the chicken yard and the yard cleaned; an open ditch still takes drainage from the yard to the stream; and the pigs have not been removed. When inspected on March 23, 1898, there were no pigs, but the ditch to the stream had been re-opened.

2 Joseph Burkeley, owner:

Property located on the east branch at Merrick road. Blacksmith shop with dwelling distant 40 feet from main stream; stable with one horse, one cow, and one calf 26 feet from stream; manure pile 20 feet from stream; pig-pen with 3 pigs 40 feet from stream. Served with official notice November 12, 1897, specifying all the above except the shop and dwelling; no attention paid to same. When inspected March 23, 1898, there were no pigs, but no other changes were noticed.

3 Henry Strohmeyer, owner:

Property on east branch. Chicken yard 20 feet from tributary. Served with official notice November 12, 1897. When inspected March 23, 1898, the conditions were found to be worse than before as the water had backed up to the chicken yard fence.

4 Hiram Fleming, owner:

Property located on east branch. Chicken yard 15 feet from tributary. Served with official notice November 12, 1897. When inspected on March 23, 1898, the water had backed up into the chicken yard.

5 Arthur Branning, owner—Albert H. Rhodes, tenant:

Stable with one horse 30 feet from tributary. Official notice served on Rhodes on November 12th, and on Branning on November 13th. Mr. Branning states that no point of his property is more than 50 feet from water line, and requests that the city take

action to purchase the same. Horse sold, manure removed, and stable cleaned. (See his letter.) When inspected March 23, 1898, the privy had been panned, but there was no other change.

6 Frederick Kash, owner:

Property located on east branch. Stable with one horse; chicken house and yard; garbage. Served with official notice November 12, 1897. When inspected, March 23, 1898, the privy had been panned, but the general conditions were bad, the horse being replaced by two goats.

7 William Moore, owner:

Large poultry yard with ducks and filthy duck pond on edge of brook. Served with official notice, November 12, 1897. When inspected on March 23, 1898, no change was observed.

8 H. J. Ernst, owner—John Zeller, tenant:

West branch. Manure piles 15 and 25 feet from stream; pig-pen with three pigs 20 feet from stream; privy 25 feet from ditch leading to stream; barn 40 feet from ditch leading to stream. Owner and tenant served with official notice, November 12, 1897. When inspected March 23, 1898, all nuisances had been abated.

9 Mrs. A. Miller, owner—Henry Combs, tenant:

Privy on bank of ditch leading to stream. Tenant about to move. Owner served with official notice, November 12, 1897. When inspected March 23, 1898, there was no change, but the tenant had vacated.

10 H. J. Ernst, owner:

Property located on east branch. Stream used for washing vegetables; tops being left to decay. Served with official notice November 20, 1897, since which date the decayed vegetable matter has been removed. When inspected on March 23, 1898, the place where the vegetables had been washed had been filled in and conditions improved in the stream crossings.

11 Benjamin Seaman:

Has stable with horse, and manure pile 76 feet from Fowler's pond, and privy 120 feet from pond. Notice served December 18, 1897. These distances apply since the pond was filled for ice cutting, otherwise the nuisances are beyond the prescribed limits. When inspected March 23, 1898, no change was noticed.

PINES POND AND BROOK

12 J. E. Johnson, owner, Sing Sing, N. Y.—C. L. Wallace, agent, Rockville Centre, N. Y.—John Bookman, tenant:

Notice served on owner (by registered mail) December 8, 1897, on agent December 8, 1897, and on tenant December 9, 1897. Property adjoining Pines pond. Garbage, refuse, and house slops. Barn (no stock) 74 feet from pond; ground slopes to pond; two chicken houses (with chickens). 58 feet and 60 feet from pond; ground slopes to pond; privy 50 feet from pond. Notices served refer to stable, chicken houses, garbage refuse, and house slops.

January 15, 1898: Since receiving the official notice served on him December 9, 1897, has built another chicken house, in which are chickens, 15 feet nearer Pines pond than those which he was notified to remove; otherwise the conditions remain the same. When inspected March 23, 1898, the privy had been panned and most of the garbage removed.

13 Shepherd Abrams estate—Widow of Shepherd Abrams, occupant—Sylvanus Johnson, occupant:

Property adjoining Pines brook. Served with official notice December 8, 1897. Pig-pen with two pigs six feet from edge of steep bank and 40 feet from open ditch leading to brook. Stable with one horse 21 feet to edge of steep bank and 59 feet from above ditch. Privy 59 feet from open ditch aboved mentioned. Official notice served December 8, 1897, on Mrs. Abrams and her son-in-law, Sylvester Johnson, referring to pig-pen with pigs and stable. Mr. Johnson writes in reply as follows: "In regard to the removal of the out-buildings on my place, I am perfectly willing. but being a man without means I am not able to go to the expense, but am willing to assist all I can. If you are a mind to move them, I am willing. The barn could not be moved intact, it would have to be taken down and then it would not be worth putting up again, as it has some apple trees near (i. e., in the way of moving) which are worth more than

the barn." He desires a reply. When inspected, March 23, 1898, the privy had been panned, but the number of pigs had been increased to five, otherwise there were no changes.

14 Dennis Feeley, owner:

Has pond for cutting ice, etc. Pig-pen with pigs and pile of manure, all near edge of pond. Large manure pile 30 feet from pond. Privy 50 feet from edge of pond. Garbage and refuse scattered about. Served with official notice December 8, 1897, mentioning pig-pen and pigs, manure piles, garbage and refuse.

When inspected, March 23, 1898, the privy had been panned and the pigs removed.

15 Young People's Christian Association, adjoining brook—Joseph McConn, president, notice served December 8, 1897, registered letter—Fred DuBois, secretary, notice served December 8, 1897:

Horse shed adjoining the swamp and 35 feet from main brook. Privy eight feet from swamp, drainage to brook. Notice refers to shed and privy. The association proposes to move the closet off the property soon. When inspected on March 23, 1898, no change was noted.

16 James Wallace:

Adjoining brook. Open ditch from dwelling house and chicken yard to brook 80 feet distant, receives house slops and drainage. Official notice served December 8, 1897, mentions chicken yard, slops and ditch. When inspected March 23, 1898, the privy had been panned but no further changes made.

17 W. G. Pine-Coffin, Adjoining stream and fish pond; absent in Klondike—W. B. Hord, New York, agent for Mr. Pine-Coffin:

Stable 45 feet from pond; horse, and manure pile. Soil pipe, from water closet, discharges 118 feet from main brook and 73 feet from a branch. Dwelling and all buildings erected since the rules and regulations came into effect. Drainage from soil pipe to brook was apparently projected but all work was suspended on it, upon my protesting against it in 1896. Official notice was served on W. B. Hord by registered mail December 8, 1897, mentioning stable and soil pipe, horse and manure pile. Mr. Hord replies: "Mr. Pine-Coffin is now in Alaska, and I cannot say

when he will return. Mr. Arthur Kinsman has been occupying the house, and he informs me that he has not used the water-closet in the house. I directed him not to do so in the future. I have also directed him to sell the horse, in order to avoid the necessity of moving the barn at present, as I do not wish to take the responsibility of moving the barn during Mr. Pine-Coffin's absence. Will you kindly advise me whether this will be satisfactory?" Inspection made December 27, shows horse sold, and the employe in charge of the place said the manure pile should be removed. When inspected March 23, 1898, the manure pile had not been removed and there was a pig-pen with four pigs and chicken house with chickens on the edge of the swamp.

SCHODACK BROOK

18 A. Hudse:

Hen-house, pig-pen with four pigs, 50 feet from bank of brook. Garbage and refuse along the stream. Notice served December 8, 1897, to all the above. Inspection made December 27th shows that he has killed two of the four pigs which he had in a pen 50 feet from the bank of the brook. When inspected March 23, 1898, there was no change, other than the privy being panned.

EAST MEADOW BROOKS

19 John C. Boyd:

Between East Meadow road and brook. Privy 81 feet from brook; chicken house, 53 feet; stable and manure pile, 44 feet. Duck yard enclosed along stream, with ducks. Dwelling house on bank of stream or ditch recently excavated. Stable, chicken house and privy on a knoll between the brook and its new branch. Notice served December 8, 1897, referring to all the above. Inspection made December 28, 1897, shows duck-yard, ducks and manure pile removed from brook. When inspected March 25, 1898, no change was noted.

20 Robert Mott:

Slop ditch leading from kitchen door to brook. Pig-pen with pigs, 35 feet from brook; privy, 47 feet from brook. Notice served December 8, 1897, referring to all of the above. When inspected

March 25, 1898, there was no change, but owner expressed his intention of removing pig-pen to a greater distance from the stream.

21 Richard Hingle, owner—Guiseppe Vellone, tenant:

Property north of Freeport road. Pig-pen with pigs and chicken house 18 feet from open ditch leading to stream. Privy, 44 feet from ditch. Dwelling 37 feet from ditch. Open slop ditch from dwelling to open ditch. Notice served December 8, 1897, on owner and tenant, referring to all nuisances as above. When inspected March 25, 1898, there were no pigs, but two manure piles had been placed on the bank of the ditch leading to the stream.

22 Frank Mollineaux, owner—Geo. Wright, tenant:

Near Mollineaux pond. Stables, chicken-houses, barn-yard, with large quantities of manure and vegetable refuse along the canal leading to the mill (but not draining directly into stream, being below level of canal). Privy, 66 feet from canal; privy, 54 feet from stream. Notice served December 8, 1897, on both owner and tenant, referring to all the above except privies. When inspected March 25, 1898, one chicken house had been removed and one privy removed to a point 63 feet from the stream. No pigs were found.

23 J. W. Barnum, owner—W. P. Stevenson, tenant:

Adjoining private pond at head of stream. Privy, 32 feet from pond. Notice served December 8, 1897, on both owner and tenant. Later: privy removed 128 feet from pond. When inspected March 25, 1898, no change was noted.

24 Oliver Belmont's farm:

Work in progress in which 18-inch sewer pipe will be used, but foreman stated that no drain pipes will be run to stream. Three notices served unofficially.

25 City property—old Anderson's mill—T. S. Smith, tenant:

When inspected March 25, 1898, it was found that owing to high spring levels the old trout ponds which were filled in during 1897 were flooded and are connected with the brook by an open ditch. There is a chicken house and chickens 25 feet from old ponds and a privy 40 feet. The privy will be panned on receipt of pans ordered December 24, 1897.

26 Stephen Smith:

When inspected March 25, 1898, a stable with a horse and cow was located 40 feet from the bank of the canal leading to the mill (Anderson's). A large manure pile adjoins the stable. This was not heretofore reported as it was doubtful if any pollution of the water supply could take place, as no water is allowed to flow through the canal.

27 Valentine Smith:

When inspected March 25, 1898, a stable with horse and cow, and a cow yard with a manure pile were located 100 feet from the stream and on ground which slopes toward the stream.

MILLBURN STREAM AND POND**28 John Holloway, owner—Webster Pearsall, tenant:**

Adjoining Millburn pond. Privy, 148 feet from pond; cow stable and manure pile, 62 feet and chicken house with chickens, 62 feet from pond. Official notice served on owner and tenant, December 9, 1897, specifying cow stable with one cow, manure pile and chicken house with chickens. When inspected March 24, 1898, there was no change noted.

29 W. O. Shabolt, owner—R. Ramsbottom, tenant, on November 19, 1897, the date of inspection:

Adjoining stream. Pig pen with pigs 26 feet from his ice pond; chicken house with chickens, 37 feet from same, and stable with one horse, 37 feet from same. Notice served on owner, December 9, 1897, referring to all the above. He replied that premises were not occupied, the tenant having removed some weeks before. Inspection made December 28, 1897, shows tenant had removed, taking pigs, horse and chickens, leaving both stable with chicken house and manure. When inspected March 24, 1898, there was no tenant, the manure had been removed and the stable and chicken house cleaned.

30 E. H. Hingle:

Adjoining upper stream. Chicken yard with chickens beside his ice pond, chicken house 32 feet from pond. Notice served, December 8, 1897, referring to chicken house and yard. When inspected March 24, 1898, there was no change noted.

NEWBRIDGE STREAM

31 T. W. Arms, owner, Boston Navy Yard—C. L. Wallace, agent, Rockville Centre—O. B. Green, tenant:

West branch. Buildings situated on edge of steep bank along pond. Stable and manure pile 75 feet from pond. Chicken house and yard at top of steep bank, 61 feet from pond. Covered slop drain from dwelling to foot of steep bank, thence an open drain to brook. Garbage and refuse along slope of bank with drainage to pond and stream. Notice served on Wallace and Green, December 23, 1897, and on Arms, December 23, 1897. When inspected on March 25, 1898, no change was noted.

WANTAGH PONDS AND STREAMS

32 Tredwell Johnson:

Adjoining west branch. Large manure pile 32 feet from bank of flume. Stable and two cows 50 feet from bank of flume. Privy 80 feet from T. D. Smith's pond. Old stable (vacant) with manure, on bank of Smith's pond. Official notice served December 23, 1897, referring to manure, stables and cows. When inspected March 26, 1898, no change was noted.

33 R. G. Dun, owner, 314 Broadway, N. Y.—Geo. A. Barker, tenant:

West branch. Large yards for chickens, ducks, geese, etc., with access to his duck ponds. Stable, manure pile and garbage and refuse on steep hillside adjoining brook and draining into same. Privy 250 feet from pond. Official notice served on tenant, and sent to owner by registered mail December 23, 1897, referring to all the above except privy. When inspected March 26, 1898, no change was noted.

34 R. G. Dun, owned, "Dun Lake"—Geo. Perkins, foreman—Theo. F. Corwin, foreman:

West branch. Privy, 96 feet from trout pond; stable, 85 feet from same; manure pile, 65 feet from same; chicken house, 45 feet from same and privy 200 feet from same. Official notice sent to owner by registered mail December 23, 1897, referring to the fore-

going. When inspected March 26, 1898, the foreman stated that he fed the trout in the pond with beef liver bought at Fulton market.

35 O. H. Tuttle, owner:

East branch. Large stable with cows and horses, barn yard with large manure piles. Open ditch from barn yard to stream, passing around ice pond, which is 100 feet distant. Official notice as to the foregoing served December 23, 1897. When inspected March 28, 1898, no change was noted.

36 Luther Lee:

Chicken house with chickens, 35 feet from stream; chicken yard along stream. Privy 106 feet from stream. Official notice as to chicken house and yard served December 23, 1897. When inspected March 26, 1898, the nuisance had been increased by a stable with one horse and one cow and a large manure pile 100 feet from the stream. There is a ridge of higher ground between the stable and the stream, and manure has been placed on the stream side of this ridge and 40 feet from the stream.

37 Mrs. Pauline Hannington, owner; served with notice December 23, 1897—R. E. Hannington, tenant:

East branch. Large duck yard enclosing stream with a large number of ducks which have access thereto. Privy 42 feet from stream. Official notice as to duck yard served December 23, 1897.

38 Mrs. Samuel Jackson, owner, Flushing, L. I.—Mrs. Louise Newman, tenant:

East branch. Privy 23 feet from large open ditch leading to stream. Garbage and refuse along the ditch. Official notice served on tenant and sent by registered mail to the owner December 23, 1897, referring to all the above. Inspection made January 7, 1898, shows privy removed to a point 50 feet from ditch, the garbage along ditch still remaining. When inspected March 26, 1898, no change was noted.

39 Geo. G. Smith:

East stream. Pig-pen with two pigs, 46 feet from ditch, leading to stream. Chicken house with chickens and ducks 40 feet from ditch. Privy 20 feet from ditch. Official notice referring to all the above served December 23, 1897. When inspected March 26, 1898, no change was noted.

40 C. W. Hunt:

West branch. When inspected March 26, 1898, a large manure pile, barn yard and stable with four horses and one cow were found 81 feet from the canal leading to T. D. Smith's mill. The live stock is watered at the canal.

41 J. A. Seymour:

At head of upper pond. When inspected March 26, 1898, a stable with four horses and two cows, cow yard and large manure pile, chicken house and chickens were found 100 feet from the pond bank.

SIMONSON'S POND AND STREAM**42 Mrs. Katherina Heil, owner—John Lucas, tenant:**

Cesspool 137 feet from high-water mark in pond; not watertight; used as a receptacle for an inside water closet. Intervention of Jamaica health board asked on March 1, 1897; action taken by them not known. Outside double privy 140 feet from pond. Official notice served on owners on November 8, 1897, and on tenant November 6, 1897. Inspected on March 24, 1898, and conditions were found unchanged.

43 Pasquali Pietaro:

Manure pile and barn 50 feet from end of ditch leading to stream. Privy 175 feet from brook. Second manure pile 50 feet from brook. Rules and regulations served October 12, 1896, and official notice November 6, 1897. Stated he would remove manure pile. When inspected March 24, 1898, the second manure pile had been partially removed and the privy panned, but a larger pile of manure has been placed 75 feet from the stream and a small pile 10 feet from the stream.

44 W. F. Schafers:

Barn, pigs and privy. Ditch drains into brook. Official notice served November 6, 1897. When inspected March 24, 1898, there were no pigs.

45 Mrs. Dora Karl:

Privy 125 feet from brook on ditch leading to same. Served with rules and regulations October 28, 1897, and official notice

November 6, 1897, complied with by filling ditch. When inspected March 24, 1898, the nuisances had been abated and the privy panned.

46 James Watts, owner:

Privy, 113 feet; manure pile, 93 feet from brook; barn, 100 feet; ditch leads directly to brook. Official notice served November 6, 1897. When inspected March 24, 1898, the privy was panned, but the ditch from the manure pile was open to within five feet of the stream.

47 Herman estate—Peter & John Herman, heirs—John Herman, tenant:

Three privies and urinal 29 feet from stream; barn and manure pile 27 feet from stream. Official notice served on Henry Hoeffner, executor, on November 6, 1897, and on John Herman, tenant, on the same date. When inspected March 24, 1898, no change was noted. The privies are too near the stream to be panned. This place should be attended to.

48 Albert Rokow, owner—Henry Brink, tenant:

Barn, privy, chickens and pigs on edge of trout pond. The trout ponds are along the edge of stream. Served with notice November 6 and 10, 1897. In compliance with same, pigs and chickens removed and yard cleaned. Property not sufficiently large to move stable where it would be outside the prescribed limits. When inspected, March 24, 1898, the privy had been panned, but there were no other changes.

49 Henry Zimmer, owner—John Froelich, tenant:

Privy 59 feet, chickens and pigs 45 feet from brook. Owner and tenant served with notice November 6, 1897. When inspected March 24, 1898, the privy was panned, but there was no other change. There is an open ditch from the pig-pen and manure pile to the stream.

50 Chas. Goeller, owner:

Wagon and horseshoeing shop 20 feet; saloon and dwelling 30 feet, and privies 20 feet and 43 feet from brook. Notice served November 6, 1897. When inspected March 24, 1898, the privy at the shop had been removed 45 feet from the stream and

panned, the privy at the dwelling had been panned, but there was a quantity of horseradish roots along the bank of the stream.

51 Catholic church, Rev. Father Houbar:

Sheds and cesspool about 125 feet, and cemetery 300 feet from brook. Notice served November 10, 1897. When inspected March 24, 1898, there was no change.

52 Louis Shaw, owner:

Dwelling on edge of stream; privy 27 feet and barn 112 feet from brook. Notice served November 6, 1897. When inspected March 24, 1898, the privy had been moved back and panned. There was a large pile of manure 75 feet from the stream and on the ground sloping toward it.

53 Andrew Zerweck:

March 24, 1898. Two piles of manure on open ditch leading to stream; one was reported on November 29, 1897, the other being placed later than January 14, 1898.

54 Wm. Krapf:

March 24, 1898. New stable had been built on edge of swamp, 127 feet from stream. Keeps chickens in a house 25 feet from swamp. Privy has been panned.

55 Mrs. Jacob Wenner, owner—Henry Wenner, tenant:

Manure pile on ground sloping to the stream and 40 feet distant.

56 Fred Thorne:

Manure pile 40 feet from stream.

ALBANY, *May 23, 1898*

WM. DALTON, *Commissioner of water supply, 150 Nassau street, New York city, N. Y.:*

Dear Sir—I am in receipt of your communication of the 19th inst., enclosing a report and detailed specifications of nuisances existing on the watershed from which the borough of Brooklyn derives its water supply, and requesting early action by this Board in the matter.

In reply you are informed that the papers in the case have been referred to the drainage committee of this Board, of which State engineer Adams is chairman.

Very respectfully,

BAXTER T. SMELZER,

Secretary

NEW YORK, *August 17, 1898*

HON. BAXTER T. SMELZER, *Secretary State Board of Health,*
Albany, N. Y.:

Dear Sir—Referring to my letter of May 19th ult., enclosing a report and detailed specification of nuisances existing in the watershed from which the borough of Brooklyn derives its water supply and which tend to the pollution of the water, I enclose herewith a further report on a number of specially aggravating cases, which demands prompt and forcible action to suppress the nuisances.

Under these circumstances I respectfully invoke the prompt aid and action of your Board, and would be pleased to have you place the matter before the Board at the earliest opportunity.

Very respectfully,

WM. DALTON,

Commissioner of water supply

(Copy.)

BROOKLYN, N. Y., *August 15, 1898*

ROBERT VAN BUREN, *Engineer in charge:*

Dear Sir—Supplementing my communication to you of April 27th last, reporting on the nuisances located along Valley stream, Pines pond and brook, Schodack brook, East Meadow brook, Millburn stream and pond, Newbridge stream, Wantagh pond and stream, and Simonson's pond and stream, I beg to submit the following report on the nuisances existing along the Springfield stream.

The directions of the corporation counsel concerning the serving of notices have been strictly followed in this case as in those already reported upon. The original notices of violation of the

rules and regulations of the State Board of Health were served upon these 29 owners and tenants of the property on April 12, 13 and 14, 1897. A re-inspection of all these properties was made on August 12th last and any change in conditions is shown in the detailed statement annexed hereto, which also shows the nuisances complained of and which are infringements of the law.

I beg to recommend that an additional report on these nuisances be immediately forwarded to the State Board of Health, so that action may be taken upon the same in connection with the cases already brought before their notice, at the meeting which is to take place in Albany at the end of this month. Mr. Olin H. Landreth, the consulting engineer of the State Board of Health, has, at my request, already inspected these nuisances and is ready to act on them as soon as due official notice is received.

Respectfully submitted,

I. M. DE VARONA,

Engineer of water supply

LIST OF NUISANCES ON SPRINGFIELD STREAM

57 A. Leonhardt, owner:

Property on east branch of Springfield stream. Nuisance consists of stable with horses, manure pile, chickens, house slops and refuse. Served with official notice April 12, 1897. When inspected on August 12, 1898, there was no change.

58 E. H. Thompson, owner:

Property on east branch of Springfield stream. Nuisance consists of stable with horses, manure heap, house slops and garbage. Served with official notice April 12, 1897. An inspection made on August 12, 1898, showed no change.

59 T. W. Spaulding, owner:

Property on east branch of Springfield stream. Nuisance consists of stable with horses, manure heap, chickens, house slops and refuse. Served with official notice April 12, 1897. Inspected August 12, 1898, no change.

60 Nathaniel Watts, owner:

Property adjoining Springfield main stream. Nuisance consists of stable with horses, manure heaps, chickens, house slops and refuse. Served with official notice April 12, 1897. An inspection made August 12, 1898, showed that there had been some filling done in swamp behind stable.

61 John Shaw, owner:

Property adjoining Springfield main stream. Nuisance consists of stable with horses, manure heaps, chickens, pigs, house slops and refuse. Served with official notice April 12, 1897. When inspected August 12, 1898, there were no pigs, horses or manure heaps.

62 E. H. Furman, owner:

Property adjoining Springfield main stream. Nuisance consists of pigs, house slops and refuse. Served with official notice April 12, 1897. Inspected August 12, 1898, no change.

63 Samuel Mills, owner:

Property adjoining Springfield main stream. Nuisance consists of ducks in stream, pigs and chickens, house slops and refuse. Served with official notice April 12, 1897. When inspected August 12, 1898, ducks had been disposed of.

64 Mrs. Geo. L. Higbie, owner—H. Leseur, tenant:

Property adjoining Springfield main stream. Nuisance consists of garbage, refuse and house slops. Served with official notice April 12, 1897. Notice also served on Mrs. Higbie for keeping an open ditch in rear of Good Templars tenements. Inspection on August 12, 1898, showed some filling in at rear of house.

65 Henry Hendrickson, owner:

Property adjoining Springfield main stream. Nuisance consists of chickens, house slops, refuse and garbage. When inspected August 12, 1898, in addition to above there was a stable and horses.

66 Thomas Foster, owner—A. F. Dingthal, tenant:

Property adjoining Springfield main stream. Nuisance consists of garbage, house slops and refuse. Both served with official notice April 12, 1897. When inspected on August 12, 1898, chickens had been added to above.

67 W. W. Durland, owner:

Property adjoining Springfield main stream. Nuisance consists of stable with horses, garbage and refuse. Served with official notice April 12, 1897. Inspected August 12, 1898, no change.

68 Geo. H. Higbie, owner—C. Gildersleeve, tenant:

Property adjoining Springfield main stream. Nuisance consists of stable and manure pile. Both served with official notice April 12, 1897. Inspected August 12, 1898, no change.

69 Mrs. Remsen Lamberson, owner:

Property adjoining Springfield main stream. Nuisance consists of chickens, house slops and refuse. Served with official notice April 12, 1897. When inspected August 12, 1898, no chickens.

70 Benjamin Schank (Hanks ?), owner:

Property adjoining Springfield main stream. Nuisance consists of chickens, pigs, manure, house slops, refuse and garbage. Served with official notice April 12, 1897. When inspected August 12, 1898, pigs had been removed.

71 Samuel J. Styles, owner:

Property adjoining Springfield main stream. Nuisance consists of stable with horses, manure piles, chickens, house slops, garbage and refuse. Served with official notice April 12, 1897. Inspection on August 12, 1898, showed no change.

72 Cole Valentine, owner:

Property adjoining Springfield main stream. Nuisance consists of a stable, chickens, house slops and refuse. Served with official notice April 14, 1897. Inspected August 12, 1898, no change.

73 Wm. Wood, owner:

Property adjoining Springfield main stream. Nuisance consists of stable, manure pile, chickens, house slops, refuse and garbage. Served with official notice April 12, 1897. Inspected August 12, 1898, no change.

74 Mrs. Phoebe Baylis, owner:

Property adjoining Springfield main stream. Nuisance consists of chickens, house slops and refuse. Served with official notice April 12, 1897. Inspected August 12, 1898, no chickens.

75 L. E. Decker, owner:

Property adjoining Springfield main stream. Nuisance consists of stable with horses, pigs, manure heaps, chickens, and other animals together with house slops and refuse. Served with official notice April 12, 1897. Inspected August 12, 1898, no pigs, but stables enlarged and more horses kept.

76 Willett C. Durland, owner:

Property adjoining Springfield main stream. Nuisance consists of garbage, refuse and house slops. Served with official notice April 13, 1897. Inspected August 12, 1898, no change.

77 Chas. Pabst, owner:

Property adjoining Springfield main stream. Nuisance consists of refuse and garbage. Served with official notice April 14, 1897. Inspected August 12, 1898, no change.

78 Frederick Stuart, owner:

Property adjoining Springfield main stream. Nuisance consists of chickens, house slops, refuse and garbage. Served with official notice April 12, 1897. Inspected August 12, 1898, stable with horses in addition to above.

79 Bernard Hendrickson, owner:

Property adjoining Springfield main stream. Nuisance consists of stable, manure pile, pig-pen, house slops, garbage and refuse. Served with official notice April 12, 1897. Inspected August 12, 1898, no change.

80 W. D. Hendrickson, owner:

Property adjoining Springfield main stream. Nuisance consists of stable and pig-pen, house slops, refuse and garbage. Served with official notice April 12, 1897. Inspected August 12, 1898, no change.

81 John Dennis, owner:

Property adjoining Springfield main stream. Nuisance consists of stable, pig-pen, chickens, house slops, refuse and garbage. Served with official notice April 12, 1897. Inspected August 12, 1898, no change.

82 Christopher E. Abrams, owner:

Property adjoining Springfield main stream. Nuisance consists of garbage and refuse. Served with official notice April 12, 1897. Inspected August 12, 1898, garbage and refuse removed; nuisance abated.

83 John W. Decker, owner:

Property adjoining Springfield main stream. Nuisance consists of garbage. Served with official notice April 12, 1897. Inspected August 12, 1898, no change.

84 Stephen Decker, owner:

Property adjoining Springfield main stream. Nuisance consists of refuse, garbage and house slops. Served with official notice April 12, 1897. Inspected August 12, 1898, no change.

85 J. H. Mills, owners:

Property adjoining Springfield main stream. Nuisance consists of garbage. Served with official notice April 12, 1897. Inspected August 12, 1898, no change.

ALBANY, August 18, 1898

HON. C. W. ADAMS, *Chairman of the drainage committee, State Board of Health, Albany, N. Y.:*

Dear Sir—I have the honor to transmit herewith, a supplemental report made by I. M. de Varona, engineer of water supply of the borough of Brooklyn, calling attention to nuisances existing along the Springfield stream from which a part of the water supply of the borough of Brooklyn is derived.

As Prof. Landreth informs me that he has submitted to you his report upon an investigation of the original complaint, I thought that possibly you would wish to call the attention of the Board to the additional complaint.

Very respectfully,

T. A. STUART,

Assistant secretary

SCHENECTADY, N. Y., *August* 17, 1898

Hon. C. W. ADAMS, *Chairman of the drainage committee, State Board of Health, Albany, N. Y.:*

Dear Sir—Agreeable to your instructions of June 23d, I beg to submit the following report of my examination of the cases of violation of the rules and regulations of the Brooklyn water supply as submitted to the State Board of Health by Mr. Wm. Dalton, commissioner of water supply of the city of New York under date of May 17, 1898.

A personal examination of each case of violation was carefully made; most of the cases requiring more or less measurements. The examination extended from July 28th to August 5th. Many of the cases examined were found not to be violations of the rules; these being mainly due to correction of defective conditions since the date of the examination by the representative of the water department of Brooklyn on which examination the charges were submitted. All of the cases submitted for examination were located in the township of Hempstead, Queens county, N. Y., except all of the cases on Simonson's pond and stream, which are in the borough of Queens, city of New York. For convenience in making references, I have taken the liberty to attach marginal numbers in red ink opposite each of the cases submitted for examination, and have referred to the cases by these numbers. I also append a copy of the set of rules and regulations for the protection of the water supply of Brooklyn, and indicate in each case the specific rule or regulation violated.

The following cases are in the township of Hempstead:

Town Board of Health

Smith Cox, supervisor, Freeport, L. I.

Luther Weeks, town clerk, Hempstead, L. I.

E. H. Wheeler, justice of the peace, Lynbrook, L. I.

Geo. W. Smith, justice of the peace, Woodmere, L. I.

James Seaman, justice of the peace, Wantagh, L. I.

Chas. Gittens, justice of the peace, Hempstead, L. I.

Olliver Davison, citizen, E. Rockaway, L. I.

VALLEY STREAM

1 Julius Gutsche, owner:

Found chicken yard 14 feet, hen-house 25 feet, stable (without horse) 33 feet, and privy, not panned, 47 feet from open ditch with water running into main stream. Violation of rules Nos. 2 and 18.

2 Joseph Berkley, owner:

Found pig-pen 44 feet, stable 50 feet, manure pile 22 feet, privy, not panned, 72 feet from bank of main stream. Bad accumulation of rubbish and garbage along bank of main stream within 20 feet of water. Violation of rules Nos. 2, 15, and 18.

3 Henry Strohmyer, owner:

Found privy, not panned, 119 feet, chicken yard 12 feet, hen-house 62 feet from stream, stagnant arm of same. Violation of rules Nos. 2 and 18.

4 Hiram Fleming, owner:

Found privy, unpanned, 120 feet, hen-house 41 feet, hen yard 12 feet from stagnant arm of stream. Violation of rules Nos. 2 and 18.

5 Arthur Branning, owner—Albert H. Rhodes, tenant:

Found privy panned, horse gone. No violation.

6 Frederick Kash, owner:

Found privy panned, but less than 20 feet, garbage on ground 35 to 40 feet from stagnant arm of stream; hen yard has open drain with water backed up in it from creek. Violation of rules Nos. 1, 15 and 18.

7 William Moore, owner:

Found ducks removed. No violation.

8 H. J. Ernst, owner—John Zeller, tenant:

Found pig-pen with two pigs 20 feet, manure pile at same 17 feet, stable with two horses 69 feet, large manure pile at same 45 feet, privy, not panned, 84 feet from stream, west branch. Violation of rules No. 2 and No. 18.

9 Mrs. A. Miller, owner—Henry Combs, former tenant—William Burrows, present tenant:

Found privy, not panned, 70 feet from stream, west branch. Violation of rule No. 2.

10 H. J. Ernst, owner:

Nuisances abated. No violation.

11 Benjamin Seaman, owner:

Found hen-house 72 feet, stable with barnyard and pile of manure in it 78 feet from Fowler's pond. Violation of rule No. 18.

12 J. E. Johnson, owner, Sing Sing, N. Y.—C. L. Wallace, agent, Rockville Center, N. Y.—John Bookman, tenant:

Stable with one cow 72 feet, manure pile at same 72 feet, hen-house in use but in good condition 42 feet, from bank of Pines Pond reservoir. (Water supply pond.) Violation of rule No. 18.

13 Shepherd Abrams estate—Shepherd Abrams' widow, occupant—Sylvanus Johnson, also occupant:

Found pig-pen with four pigs 45 feet from stream; stable 64 feet from bank of stream. Violation of rule No. 18.

14 Dennis Feeley, owner:

Found pig-pen with three pigs, in filthy condition 22 feet from stagnant arm of private pond formed by dam built by Mrs. Wm. S. Hall, adjoining owner, the stagnant water is on Hall's land, two feet from Feeley's line. Pig-pen moved to this position by Feeley in April, 1898, after notice from Brooklyn water department. Large manure pile at former location of pig-pen, 13 feet from stagnant water in same pond on Feeley's own land. Cow stable with one cow, in filthy condition, 67 feet from first mentioned stagnant arm, draining into it. Stable with four horses, 76 feet from edge of pond. Accumulations of refuse with some putrescible matter scattered about the yard; some within 50 feet, and nearly all within 100 feet of the pond. Violations of rule No. 15 and No. 18.

15 Young People's Christian Association—Joseph McConaughy, president—Fred. Dubois, secretary:

Hitching shed for horses, rarely ever used and not in bad condition, 35 feet from stream. Privy being panned by water department. No violation.

16 James Wallace:

Found hen house and yard thoroughly cleaned; not now used though small ditch from yard to stream. Slops now disposed of elsewhere. No violation.

17 W. G. Pine-Coffin, owner—W. B. Hord, New York agent for owner:

House and stable unoccupied; manure gone; soil-pipe not connected with house or privy, and only drains low ground. No violation at present.

SCHODACK BROOK**18 A. Hudse:**

Found pig pen with two pigs, in bad condition, 60 feet from stream and draining directly into it. Manure pile from same pen extends within 45 feet of stream. Violation of rule No. 18.

EAST MEADOW BROOKS**19 John C. Boyd:**

Found stable with one horse, 46 feet from brook, running into East Meadow brook. Poultry yard with over 200 head of poultry, fronts on this brook for 150 feet. An artificial pond has been formed by damming the brook; pond 150 feet long by 10 feet to 15 feet wide and one to three feet deep; no stream enters it except springs in bottom; very filthy. Privy panned. Violation of rule No. 18.

20 Robert Mott:

Found pig pen removed, but accumulation of manure around the old pen there still. House slops thrown regularly on ground 30 feet to 35 feet from bank of east branch of Meadow brook. Violation of rules No. 11 and No. 18.

21 Richard Hingle, owner—Guiseppe Vellone, tenant:

Found hen-house with 30 chickens, 24 feet from open ditch with water running into main stream. Rabbit pen with seven rabbits, 18 feet from same ditch. House slops thrown into same ditch. Violation of rules No. 11, No. 15 and No. 18.

22 Frank Mollineaux, owner—Geo. Wright, tenant:

Found all the stables, hen-houses, manure piles, etc., charged were below the level of the surface of water in the pond and millrace, and drainage into the stream is therefore impossible. No violation.

23 J. W. Barnum, owner—W. P. Stevenson, tenant:

Privy now 134 feet from private pond, emptying into East Meadow brook. Privy not panned. Pile of garbage, slops and ashes 64 feet from pond. Violation of rules No. 2, No. 11 and No. 15.

24 Oliver Belmont:

No objectionable items found. No official notice. No violation.

25 City property—Old Anderson mill—F. S. Smith (not T. S. Smith), tenant:

Found city had panned privy. No other violations. No violations.

26 Stephen Smith:

No official notice. No violation.

27 Valentine Smith:

No official notice served. No violation.

MILBURN STREAM AND POND

28 John Holloway, owner—Webster Pearsall, tenant:

Found privy, not panned, 147 feet from bank of Milburn supply pond (storage reservoir). Cow stable with one cow 68 feet, hen-house 80 feet, accumulation of manure on ground reaching 70 feet to 100 feet, from pond. Violation of rules No. 2 and No. 18.

29 W. O. Shabolt, owner—R. Ramsbottom, tenant:

Found house and barn unoccupied; pig-pen torn down; manure removed; ice pond empty. No violation.

30 E. H. Hingle:

Found chicken house 32 feet from ice pond, but the house had cement bottom and was kept very clean. No drainage from same to pond. No violation.

NEWBRIDGE STREAM

31 T. W. Arms, owner, Boston Navy yard—C. L. Wallace, agent, Rockville Center, N. Y.—O. B. Green, tenant:

Found garbage on ground 50 feet, hen-house 60 feet, privy, not panned, 92 feet, from private pond emptying into Newbridge stream. Hen-yard with 50 hens fronts open on pond for 50 feet. Closed drain carrying house slops empties into open drain 62 feet from creek, just below pond, thence direct drainage and flow into creek. Violation of rules No. 2, No. 11, No. 15 and No. 18.

WANTAGH PONDS AND STREAMS

32 Tredwell Johnson:

Found manure pile 50 feet from stream; stable 68 feet from same. Privy panned and 80 feet from Smith's pond. No violation.

33 R. G. Dun, owner, No. 314 Broadway, N. Y.—Geo. A. Barker, tenant:

Found 200 head of poultry in yards fronting (some open) for 80 feet along private pond, with hen-houses 27 feet and 29 feet from water edge; ground slopes steeply to bank and drainage is direct. Several other poultry houses and yards within 100 feet of bank of pond; stable 68 feet from same. Violation of rule No. 18.

34 R. G. Dun, owner, Dun lake—Theodore F. Corwin, foreman:

Found hen-house 42 feet, stable with two horses and one cow 91 feet, large amount of manure extending from 90 feet to 115 feet, from private pond, with steep fall to ground surface and direct drainage. Privy panned and 95 feet away from pond. Violation of rule No. 18.

35 O. H. Tuttle, owner:

Found all items complained of outside of limits. No violation.

36 Luther Lee:

Found hen-house 37 feet, cow stable in bad condition, one cow and large accumulation of manure 100 feet, from stream, but signs of direct drainage visible plainly. Privy 100 feet and panned. Violation of rule No. 18.

37 Mrs. Pauline Hannington; owner—R. E. Hannington, tenant:

Found duck yard fronting 200 feet along private pond on Wantagh creek; duck house 4 feet from pond. Another poultry yard fronting along stream just below pond. Keep 3000 head poultry, 500 of which have access to stream or pond. Water of pond and stream filthy from poultry. Violation of rule No. 18.

38 Mrs. Samuel Jackson, owner, Flushing, L. I.—Mrs. Louise Newman, tenant:

Privy has been panned and garbage removed. No violation.

39 Geo. G. Smith:

Found privy panned, but only 19 feet from water course with water in it and four feet above it, with direct drainage to it. Pig-pen with three pigs 46 feet, and hen-house 40 feet, from same water course; 200 feet to 250 feet to main stream. Violation of rules No. 1 and No. 18.

40 C. W. Hunt:

No notice served. No violation to report.

41 J. A. Seymour:

Found no notice had been served here. No violation to report, though the place is a bad one.

The following cases are all in the borough of Queens, New York.

SIMONSON'S POND AND STREAM

42 Mrs. Katheraina Heil, owner—John Lucas, tenant:

Found cesspool with water closet from house connected to it, 133 feet from edge of Simonson's pond (storage reservoir). Garbage, refuse, slops and ashes on ground 85 feet from pond, with fairly direct drainage to it. Pig-pen in filthy condition 93 feet, and pile of manure around same 87 feet, from pond. Ten feet to 15 feet fall from all these items to pond and drainage quite direct. Violation of rules No. 2, No. 11, No. 15 and No. 18.

43 Pasquali Pietaro:

Found stable with three horses 45 feet, accumulation of manure reaching from 55 feet to 81 feet, from pond; hen-house 93 feet. Violation of rule No. 18.

44 W. F. Schafer:

Found stable 50 feet and manure pile at same 48 feet from spring run, flowing into Foster's meadows, a branch of Simonson's stream. Violation of rule No. 18.

45 Mrs. Dora Karl:

Found nuisances all abated. No violation.

46 James Watts, owner:

Found stable with one horse, 31 feet from open ditch containing water flowing to main stream, 100 feet distant. Remaining part of large manure pile 30 feet from head of open ditch leading to main stream, except for four feet or five feet of sandy soil intervening at lower end, placed there to close ditch. No sufficient purification. Violation of rule No. 18.

47 Herman estate—Peter and John Herman, heirs—John Herman, tenant:

Found stable with two horses 31 feet, manure pile 20 feet, garbage on ground nine feet, and slops on ground five feet from main stream. Privy has been panned, and 31 feet from stream. Violation of rules No. 11, No. 15 and No. 18.

48 Albert Rokow, owner—Henry Brink, tenant:

Found no animals are kept on place. Privy panned and 36 feet from stream. No violations.

49 Henry Zimmer, owner—John Froelich, tenant:

Found pig-pen and manure removed and ditch filled up. No violation.

50 Charles Goeller, owner:

Found privy removed to 40 feet from stream and panned, garbage removed. No violation.

51 Catholic church—Rev. Father Houbar:

Found cesspool with closet connections 121 feet from main stream. Violation of rule No. 2.

52 Louis Shaw, owner:

Found large manure pile 95 feet from main stream, with direct flow and seepage visible all the way to stream, very bad. Violation of rule No. 18.

53 Andrew Zerwick:

Found manure piles removed. No violation.

54 William Krapf:

Found stable four feet, hen-yard four feet, hen-house 21 feet, manure pile from stable 31 feet, from standing water in marsh having direct water connection with main stream without purification. Violation of rule No. 18.

55 Mrs. Jacob Wenner, owner—Henry Wenner, tenant:

No nuisance found and no notice served. No violation.

56 Fred. Thorne:

No notice has been served. No violation.

All of the cases were examined in company with Mr. W. B. Osterhaut, assistant engineer Brooklyn water supply, who had made a personal inspection of all of the streams previously for the water department.

Mr. John M. Smith, superintendent of conduits and reservoirs of the Brooklyn water supply, also accompanied us in the examinations on the Valley stream, Wantagh stream, and Simonson's stream and pond.

All of the privies panned have been done so by the Brooklyn water department, by whom they are also kept cleaned.

Very respectfully submitted,

OLIN H. LANDRETH,

Consulting engineer

SCHENECTADY, N. Y., *September 7, 1898*

Hon. C. W. ADAMS, *Chairman of the drainage committee, State Board of Health, Albany, N. Y.:*

Dear Sir.—I beg to report that agreeable to your instructions of the 26th of August, I have examined each of the alleged violations for the rules for the protection of the water supply of the city of Brooklyn, which were submitted to the State Board of Health by water commissioner William Dalton, under date of August 17th. As previously explained to you I found that a large proportion of these cases had not been shown me at the time of the examination of the previous list of cases, and therefore went again to Long Island for the purpose of completing the examination.

All of the cases on this list are located in the hamlet of Springfield, situated in the borough of Queens, city of New York.

SPRINGFIELD STREAM AND POND

57 A. Leonhardt, owner:

Found chicken yard with 50 head of poultry fronting on branch of main stream for 200 feet; manure pile at stable 55 feet from end of ditch leading to same branch, with drainage to ditch direct and purification insufficient. Violation of rules Nos. 18 and 19.

58 E. H. Thompson, owner:

Found manure pile at stable with three horses, 91 feet from private pond with strong direct fall and drainage. Violation of rule No. 18.

59 T. W. Spaulding, owner:

Found horse stable 35 feet, manure pile and refuse 15 feet, chicken house and yard eight feet, from bank of private pond. Violation of rule No. 18.

60 Nathaniel Watts, owner:

Found stable vacant, manure gone, pigs gone, hen-house 100 feet from stream. No violation.

61 John Shaw, owner:

Found horse and pigs gone, hen-house 100 feet from stream. No violation.

62 E. H. Furman, owner:

Found poultry yard with 30 hens fronting on stream for 100 feet or more. Violation of rule No. 18.

63 Samuel Mills, owner:

Found chicken yard 50 feet from stream with fair opportunity for purification between. No violation.

64 Mrs. George L. Higbee, owner—H. Leseur, tenant:

Found house-drain with slops flowing into ditch leading into stream; refuse and garbage on ground. Violation of rules Nos. 11 and 15.

65 Henry Hendrickson, owner:

Found horse stable 41 feet, hen-house 43 feet from stream arm which is on land of Mrs. George L. Higbee, who refuses permission to fill up this arm of the stream. Also refuse scattered on ground. Violation of rules Nos. 15 and 18.

66 Thomas Foster, owner—A. F. Dingthal, tenant:

Found poultry yard with 30 or 40 head of poultry, edges on marsh which overflows at ordinary high water. Garbage and animal refuse on ground in and bordering on the marsh. Violation of rules Nos. 15 and 18.

67 W. W. Durland, owner:

Found stable 87 feet from stream; manure pile under cover and 84 feet from stream. No violation.

68 George H. Higbee, owner—C. Gildersleeve, tenant:

Found stable 140 feet from private pond. Drainage indirect. No violation.

69 Mrs. Remsen Lamberson, owner:

Chickens sold; garbage collected in barrels and removed. No violation.

70 Ben Shanck, owner:

Hen-house 4 feet, stable 24 feet from stream. Hen-yard fronts on stream. Privy panned but only 24 feet from stream. House drain direct to within 24 feet of stream, thence flows into depression and reaches stream after imperfect purification. Hen-house filthy. Violation of rules Nos. 1, 11 and 18.

71 Samuel J. Styles, sr., owner:

Found manure pile 11 feet from open ditch, containing water and emptying into main stream, 45 feet distant. Stable with two or three horses 23 feet from another open ditch, with water emptying into stream. Hen house 25 feet from latter ditch. Violation of rule No. 18.

72 Cole Valentine, owner—John Mack, tenant:

Found privy panned 25 feet and another, both used, 19 feet from open ditch with water. Violation of rule No. 1.

72-a Cole Valentine, owner and occupant:

Found manure pile 32 feet, hen-house 36 feet. Hen-yard, very foul, one foot from creek; stable 50 feet from creek. Garbage and refuse scattered over the ground along track. Ground only a few inches above present level of water in stream; ordinary rise will bring the water much nearer previous items and submerge and surround some of them. Filthy place. Violation of rules Nos. 1 and 18.

73 W. W. Durland, owner—W. D. Wood, tenant:

Stable, 30 feet; manure pile, 20 feet; otherwise, yard clean. Violation of rule No. 18.

74 Mrs. Phoebe Baylis, owner:

Found two piles of garbage 45 feet from ditch leading to stream. Violation of rule No. 15.

75 L. E. Decker, owner—Contractor's barn and stable:

Found arm of main stream, 50 feet long, three feet to six feet wide, full of water; extends into poultry yard and under edge of stable with 20 to 40 horses. Large pile of manure, 15 feet from arm of stream; a very bad yard. Privy 50 feet from main stream was panned by city of Brooklyn, in September, 1896. On April 23, 1897, L. E. Decker notified Charles F. Gardner, the stream inspector, to remove the pans, which he declined to do. Decker removed the pans from the privy on April 27, 1897, and prohibited Gardner from replacing them. Another privy behind the barn, 60 feet from arm of stream was panned by city of Brooklyn at same time as the former one, but Decker has forbidden Gardner to clean it and it is now full to the top. Another large manure pile 40 feet from arm of stream. A very aggravated and willful case of violation of rules Nos. 2, 7 and 18.

76 Willett C. Durland, owner— ————, tenant:

Found large pile of garbage and refuse 29 feet from water standing in swampy ditch leading to main stream. Violation of rule No. 15.

77 Charles Pabat, owner:

Refuse with some garbage thrown on this vacant lot, across street from L. E. Decker's store, by other parties, said to be from Decker's store and others. There is an open ditch along street front of this lot, fronting on Merrick road, containing house sewage and house slops draining directly into main stream. This sewage and slops come from the open end of closed drain supposed to lead from the hotel situated diagonally across the corner from L. E. Decker's store. Directed the stream inspector to investigate the source of this sewage and slops. The vacant lot is not enclosed, but the line of the ditch would apparently fall outside the fence line. Violation of rules Nos. 11 and 15.

78 Mrs. Jane Stuart, owner—Mrs. Jane Stuart and son Frederick occupants:

Found hen house 14 feet from stream and poultry yard fronting stream for 60 feet. Stable with no horse at present, 40 feet from stream. Violation of rule No. 18.

79 Bernard Hendrickson, owner:

Found stable, 33 feet; manure piles, 30 and 33 feet; hen house, 20 feet from open ditch to main stream with water in it whenever it rains. Violation of rule No. 18.

80 W. D. Hendrickson, owner:

Found stable with two horses 40 feet from stream; manure piles, 67 feet from stream and drains directly into same by furrows. Hog-pen with two pigs 26 feet from ditch to main stream; privy panned, but refuses to allow stream inspector Gardner to clean the same or to enter his land for the purpose of cleaning the banks of the stream. Violation of rules Nos. 2, 7 and 18.

81 John Dennis, owner:

Found stable with one horse, 30 feet; hen house, 15 feet; and pig-pen with large accumulation of manure and in bad condition 30 feet from open ditch leading into main stream, 135 feet distant. Violation of rule No. 18.

82 Christopher E. Abrams, owner:

Found this a vacant lot with refuse and garbage thrown into it apparently by his neighbors adjoining. Violation of rule No. 15.

83 John W. Decker, owner—Stephen Decker, tenant:

Found large accumulation of garbage on ground 20 feet from water in marsh and 35 feet from deep arm of stagnant water connected directly with main stream. Violation of rule No. 15.

84 Stephen Decker is reported by stream inspector not to own any real estate. He occupies the premises reported as No. 83. These two premises have evidently been confused in the records. No violation under this item.

85 J. H. Mills, owner:

No garbage found now. No violation.

A copy of the rules and regulations for the protection of the purity of the Brooklyn water supply, enacted July 31, 1894, is appended hereto for purposes of comparison and verification.

I am, dear sir,

Very truly yours,

OLIN H. LANDRETH,

Consulting engineer

Rules and regulations for the sanitary protection of so much of the potable water of the counties of Kings, Queens and Suffolk as are now used for the supply of water for the city of Brooklyn.

PRIVIES ADJACENT TO LAKES, PONDS AND RESERVOIRS AND WATER COURSES.

First. No privy, or place for the deposit or storage of human excreta, shall be constructed, located or maintained within fifty (50) feet horizontal measurement, of the high water mark of any lake, pond or reservoir, or within thirty (30) feet, horizontal measurement, of the high water mark or precipitous bank of any spring, stream or water course of any kind, tributary to said lakes, ponds or reservoirs on the entire watershed of the streams now used for the water supply of the city of Brooklyn, and whenever practicable these distances shall be one hundred (100) feet and fifty (50) feet respectively.

Second. No privy vault, pit or cess-pool or non-transportable receptacle of any kind for the reception or storage of human excreta shall be constructed, located or maintained within three hundred (300) feet, horizontal measurement, of the high water mark of any lake, pond or reservoir, or within one hundred and thirty

(130) feet, horizontal measurement, of the high water mark or the precipitous bank of any spring, stream or water course of any kind on the entire watershed of the streams now used for the water supply of the city of Brooklyn.

Third. Every privy, or place for the deposit of human excreta, which is constructed, located or maintained between the aforesaid limits of fifty (50) feet and three hundred (300) feet, horizontal measurement, of the high water mark of any lake, pond or reservoir, or within the limits of thirty (30) feet and one hundred and thirty (130) feet, horizontal measurement, of the high water mark or precipitous bank of any spring, stream or water course tributary to such lakes, ponds or reservoirs on the entire watershed of the streams now used for the water supply of the city of Brooklyn, and from which the said excreta are not at once removed automatically, by means of suitable water-tight pipes or conducts to some proper place of ultimate disposal, as hereinafter provided, shall be arranged in such manner that all said excreta shall be received and temporarily maintained in suitable vessels or receptacles, which shall be at all times maintained in an absolutely water-tight condition, and which will admit of convenient removal to some place of ultimate disposal, as hereinafter set forth.

Fourth. Whenever it shall be found that, owing to the porous character of the soil, the height and flow of the surface and subsoil waters, the steepness of the slopes, or other special conditions of the locality, the excremental matter from any privy, cesspool or other receptacle for human excreta, situated within the limits hereinbefore provided, may be washed over the surface or through the subsoil into any lake, pond or reservoir, or into any spring, stream or water course tributary to such lake, pond or reservoir on said watershed of the streams now used for the water supply of the city of Brooklyn, without having been thereby, in the judgment of the State Board of Health, sufficiently purified, then the said privy, cesspool or other receptacle for human excreta shall, after due notice to the owner thereof, be removed to such greater distances from said high water marks as shall be considered safe and proper by the State Board of Health.

Fifth. All said receptacles for human excreta must be provided with tightly fitting covers, which shall be securely applied during the process of removal, so that no portion of the contents of said receptacle shall escape therefrom while being transported from the privy to the place of ultimate disposal.

Sixth. A sufficient number of duplicate receptacles of said general description or character shall be provided, so that when one of the same is removed from the privy an empty receptacle may at once be substituted in its place.

Seventh. All such receptacles, when filled, shall be removed to some place of ultimate disposal as hereinafter provided, and said receptacles themselves shall be thoroughly cleaned and deodorized as often as may be found necessary to maintain the privy in proper sanitary condition, and to prevent an overflow of the excreta upon the soil or floor of said privy.

Eighth. The excreta collected in the aforesaid receptacles shall be removed to some convenient place of ultimate disposal, which shall not be less than five hundred (500) feet from the high-water mark or precipitous bank of any lake, pond or reservoir, and not less than three hundred (300) feet from the high water mark or precipitous bank of any stream, spring or water course of any kind on the entire watershed of the streams now used for the water supply of the city of Brooklyn, and from which they cannot be directly washed by rain or melting snow, or otherwise over the surface of the ground into any lake, pond or reservoir, or into any spring, stream or water course, channel or well which is tributary thereto on the entire watershed of the streams now used for the water supply of the city of Brooklyn.

Ninth. In the absence of any other manner of disposal of the excreta collected as aforesaid, which is not specifically approved by the State Board of Health after due submission to said Board, the said excreta shall be disposed of by digging the same into the surface soil or by burial in trenches of moderate depth in places where the character of the subsoil and the depth of the ground water level will afford ample security both against the undue pollution of such ground water and the soil itself, and for the efficient filtration of the liquid contents of the said receptacles.

Tenth. The removal of the aforesaid receptacles from the privies shall be conducted in such manner as to cause as little inconvenience or annoyance to the occupants of the premises as is compatible with proper management of the work.

HOUSE SLOPS, SINK WASTES, LAUNDRY WATER AND OTHER SIMILAR SEWAGE

Eleventh. No sewage, house slops, sink wastes, water in which clothes or bedding have been washed or rinsed, nor any other polluted water or liquid shall be thrown or discharged directly into any lake, pond or reservoir, as aforesaid, or into any spring, stream or water course tributary thereto, nor shall any such aforesaid liquid or solid matter or other polluted liquid be thrown or discharged upon the surface of the ground or into the ground below the surface in any manner whereby the same may flow into any lake, pond or reservoir, or into any spring, stream or water course tributary thereto within fifty (50) feet, horizontal measurement, of the high water mark in any lake, pond or reservoir, or within thirty (30) feet of the high water mark or the precipitous bank of any spring, stream or water course tributary to said lakes, ponds or reservoirs, and wherever practicable these distances shall be one hundred (100) feet and fifty (50) feet, respectively.

Twelfth. The foregoing rules shall be considered applicable only where the quantity of such polluted water or liquid waste is small, such as may be derived from a single family, but when relatively large quantities of such waste are produced and are thrown or discharged upon or below the surface of the ground at any point beyond the aforesaid limits, in such manner or volume as to cause the same to flow over the surface of the ground, or through it below the surface, into any lake, pond or reservoir, or into any spring, stream or water course tributary thereto, without having been thereby, in the judgment of the State Board of Health, sufficiently purified; then, upon due notice to the owners or occupants of the premises from which such discharge comes, the aforesaid distances shall be increased respectively to such other limit as shall appear justified to the State Board of Health.

Thirteenth. In case the human excrement is mingled with any of the aforesaid polluted water or other sewage, the discharge of the same upon or below the surface of the ground will be governed by the rule relating to privies.

Fourteenth. No clothes or unclean objects of any kind shall be washed in any lake, pond or reservoir, or in any spring, stream or water course tributary thereto.

GARBAGE AND REFUSE

Fifteenth. No garbage or putrescible refuse of any kind shall be thrown or discharged directly into any lake, pond or reservoir, or into any spring, stream or water course tributary thereto; nor shall any such substance be placed in large quantities upon or below the surface of the ground where they may be washed into any lake, pond or reservoir, or into any spring, stream or water course tributary thereto, within one hundred (100) feet of the high water mark in any lake, pond or reservoir, or within fifty (50) feet of the high water mark or precipitous bank of any spring, stream or water course tributary to said lakes, ponds or reservoirs; and wherever possible these distances shall be three hundred (300) feet and one hundred and thirty (130) feet, respectively.

Sixteenth. The State Board of Health shall have the right to increase the aforesaid distances in all cases where in its judgment it may appear that injury to the purity of water results from the deposit or storage of garbage or putrescible refuse as aforesaid.

Seventeenth. Where it becomes impracticable to comply with the foregoing rules, so far as the disposal of garbage or putrescible refuse upon or below the surface of the ground is concerned, then suitable water-tight receptacles must be provided and must be so located and maintained on the premises that none of the contents thereof shall escape and pollute the waters as heretofore indicated.

MANURES, COMPOSTS AND SIMILAR MATTER

Eighteenth. No stable, pig-sty, hen-house, barnyard, hog-yard, hitching or standing place for horses or cattle, or other place where animal manure accumulates, shall be constructed, located or maintained within one hundred (100) feet of the high water mark in any lake, pond or reservoir, or within fifty (50) feet of the high water mark or precipitous bank of any spring, stream or water course tributary to said lakes, ponds or reservoirs; and wherever possible these distances shall be three hundred (300) feet and one hundred and thirty (130) feet, respectively.

Nineteenth. No stable, pig-sty, hen-house, barnyard, hog yard, hitching or standing place for horses or cattle, or other place where animal manure accumulates, shall be arranged or maintained in such manner that the washings or draining therefrom may flow through open or covered drains or channels into any pond, lake or reservoir, or into any spring, stream or water course tributary thereto, without having undergone proper purification.

Twentieth. The foregoing rules shall also apply to composts and to masses of fermented or decayed fruit, vegetables, roots, grain, sawdust, leaves or other vegetable substances, which may be used either along or in combination with other matter as manure, or as food for domestic animals.

DEAD ANIMALS, VEGETABLE REFUSE AND MANUFACTURING WASTES

Twenty-first. No dead animal, bird, fowl, fish or reptile, or parts thereof, or any filthy or decaying matter of animal or vegetable origin derived from habitations, barns or stables, nor any putrescible matter or waste product or polluted liquid from any slaughter houses, creameries, condensed milk factories, cheese factories, breweries, distilleries, cider mills, wine or beer vaults, sugar or glucose factories, tanneries, woolen mills, paper mills, pulp mills, saw mills, gas works, or other manufactories, shall be thrown, discharged, drained or washed into any lake, pond or reservoir, or into any spring, stream or water course tributary thereto.

Twenty-second. No dead animal, bird, fish, fowl or reptile, or any part thereof, shall be buried in the ground within three hundred (300) feet of the high water mark of any lake, pond or reservoir, or within one hundred and thirty (130) feet of the high water mark or precipitous bank of any spring, stream or water course tributary thereto.

Twenty-third. No live sheep or other animals shall be washed in any lake, pond or reservoir, or in any spring, stream or water course tributary thereto; neither shall any person swim, bathe or wash in any of said lakes, ponds or reservoirs, or in the streams tributary thereto.

Twenty-fourth. The waste liquids which may be polluted with putrescible or deleterious organic matter from any of the operations above indicated shall all be thoroughly filtered or otherwise purified before being allowed to escape into any lake, pond or reservoir, or into any spring, stream or water course tributary thereto.

CEMETERIES

Twenty-fifth. No interment shall be made in any cemetery or other place of burial on the entire watershed of the streams now used for the water supply of the city of Brooklyn within three hundred (300) feet, horizontal measurement, of the high water mark in any lake, pond or reservoir, or within one hundred and thirty (130) feet, horizontal measurement, of the high water mark or precipitous bank of any spring, stream or water course tributary to such lakes, ponds or reservoirs.

Twenty-sixth. Whenever it shall be brought to the notice of the State Board of Health that, owing to the porous character of the soil, the height and flow of the subsoil waters, the steepness of the slopes or other special conditions of the locality, the percolation or drainage from any cemetery or place of burial is polluting the waters of any lake, pond or reservoir, or of any spring, stream or water course tributary thereto, the aforesaid limits within which interments are not permitted shall be extended as much further from said high water marks as shall be considered safe and proper by the State Board of Health.

PROVISION FOR APPEAL TO STATE BOARD OF HEALTH

Twenty-seventh. Whenever any system of treating excremental matter from any dwelling, hotel, stable, factory or other building from which such matter may be discharged, by means of subsurface irrigation, filtration, chemical process, or otherwise, has already been established, and now discharges the effluent liquid or solid matter anywhere within five hundred (500) feet, horizontal measurement, of the high water mark in any lake, pond or reservoir, or within three hundred (300) feet, horizontal measurement, of the high water mark or precipitous bank of any spring, stream or water course tributary to such lakes, ponds or reservoirs on said watersheds, such discharge shall no longer be permitted but must be carried to some suitable point beyond said limits respectively, unless especially allowed by the State Board of Health.

Twenty-eighth. Wherever any system of treating house slops, sink wastes, laundry water, stable drainage, factory waste or refuse, garbage or other putrescible waste matter or the drainage therefrom, by means of subsurface irrigation, filtration, chemical process or otherwise, has already been established and now discharges the effluent liquid or solid matter anywhere within fifty (50) feet, horizontal measurement, of the high water mark in any pond, lake or reservoir, or within thirty (30) feet, horizontal measurement, of the high water mark or precipitous bank of any tributary spring, stream or water course, such discharge shall no longer be permitted, but must be carried to some suitable point beyond said limits respectively, unless specially allowed by the State Board of Health.

PENALTY

In accordance with section 70 of chapter 661 of the Laws of 1893, a penalty of not less than fifty (\$50) dollars nor more than one hundred (\$100) dollars is hereby imposed upon any corporation, person or persons guilty of a violation of, or non-compliance with, any of the above given mandatory rules or regulations, to be recovered under said act.

ALBANY, August 2, 1894

At a meeting of the State Board of Health held at Saratoga Springs on July 31, 1894, the foregoing rules and regulations were made, ordained and established, pursuant to chapter 661 of the Laws of 1893.

FLORENCE O'DONOHUE

J. F. BARNES, *Secretary and executive officer*

ALBANY, September 30, 1898

Hon. C. W. ADAMS, *State engineer and surveyor, Albany, N. Y.:*

Dear Sir—I am in receipt of your communication of the 29th inst., transmitting the papers in connection with the water supply of the borough of Brooklyn, upon which you reported at the meeting of the Board, held September 26, 1898.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, October 22, 1898

Hon. MICHAEL C. MURPHY, *President Board of Health, New York:*

Dear Sir—Complaint having been made to this Board by the commissioners of water supply of New York city, that the rules and regulations made for the sanitary protection of the water supply of the borough of Brooklyn were being violated, this Board upon investigation finds that in the borough of Queens, New York city, the following violations of the rules exist:

SIMONSON'S POND AND STREAM

1 Mrs. Katherine Heil, owner—John Lucas, tenant:

Found cesspool with water closet from house connected to it, 133 feet from edge of Simonson's pond (storage reservoir). Garbage, refuse, slops and ashes on ground 85 feet from pond, with fairly direct drainage to it. Pig-pen in filthy condition 93 feet, and pile of manure around same 87 feet from pond. Ten feet to 15 feet fall from all these items to pond and drainage quite direct. Violation of rules No. 2, No. 11, No. 15 and No. 18.

2 Pasquali Pietaro:

Found stable with three horses 45 feet, accumulation of manure reaching from 55 feet to 81 feet from pond; henhouse 93 feet. Violation of rule No. 18.

3 W. F. Schafer:

Found stable 50 feet, and manure pile at same 48 feet, from spring run flowing into Foster's meadows, a branch of Simonson's stream. Violation of rule No. 18.

4 James Watts, owner:

Found stable with one horse, 31 feet from open ditch containing water flowing to main stream 100 feet distant. Remaining part of large manure pile 30 feet from head of open ditch leading to main stream, except for four feet or five feet of sandy soil intervening at lower end, placed there to close ditch. Not sufficient purification. Violation of rule No. 18.

5 Herman estate—Peter and John Herman, heirs—John Herman, tenant:

Found stable with two horses 31 feet, manure pile 20 feet, garbage on ground nine feet, and slops on ground five feet from main stream. Privy has been panned and 31 feet from stream. Violation of rules No. 11, No. 15 and No. 18.

6 Catholic church—Rev. Father Houbar:

Found cesspool with closet connections 121 feet from main stream. Violation of rule No. 2.

7 Louis Shaw, owner:

Found large manure pile 95 feet from main stream, with direct flow and seepage visible all the way to stream. Very bad. Violation of rule No. 18.

8 Wm. Krapf:

Found stable 4 feet, hen-yard 4 feet, hen-house 21 feet, manure pile from stable 31 feet, from standing water in marsh having direct water connection with main stream without purification. Violation of rule No. 18.

SPRINGFIELD STREAM AND POND**9 A. Leonhardt, owner:**

Found chicken yard with 50 head poultry fronting on branch of main stream for 200 feet. Manure pile at stable, 55 feet from

end of ditch to same branch, with drainage to ditch direct and purification insufficient. Violation of rules No. 18 and No. 19.

10 E. H. Thompson, owner:

Found manure pile at stable with three horses, 91 feet from private pond, with strong direct fall and drainage. Violation of rule No. 18.

11 T. W. Spaulding, owner:

Found horse stable 35 feet, manure pile and refuse 15 feet, chicken house and yard 8 feet from bank of private pond. Violation of rule No. 18.

12 E. H. Furman, owner:

Found poultry yard with 30 hens, fronting on stream for 100 feet or more. Violation of rule No. 18.

13 Mrs. Geo. L. Higbee, owner—H. Leseur, tenant:

Found house drain with slops flowing into ditch leading into stream. Refuse and garbage on ground. Violation of rules No. 11 and No. 15.

14 Henry Hendrickson, owner:

Found horse stable 41 feet, hen-house 43 feet from stream arm which is on land of Mrs. Geo. L. Higbee, who refuses permission to fill up this arm of the stream. Also refuse scattered on ground. Violation of rules No. 15 and No. 18.

15 Thomas Foster, owner—A. F. Dingthal, tenant:

Found poultry yard with 30 or 40 head of poultry, edges on marsh which overflows at ordinary high water. Garbage and animal refuse on ground in and bordering on the marsh. Violation of rules No. 15 and No. 18.

16 Ben. Schanck, owner:

Hen-house 4 feet, stable 24 feet, from stream. Hen yard fronts on stream. Privy panned, but only 24 feet from stream. House drain direct to within 24 feet of stream, thence flows into depression and reaches stream after imperfect purification. Hen-house filthy. Violation of rules No. 1, No. 11 and No. 18.

17 Samuel J. Styles, sr., owner:

Found manure pile 11 feet from open ditch, containing water and emptying into main stream 46 feet distant. Stable with two

or three horses, 23 feet from another open ditch with water emptying into stream. Hen-house 25 feet from latter ditch. Violation of rule No. 18.

18 Cole Valentine, owner—John Mack, tenant:

Found privy panned 25 feet, and another, both used, 19 feet from open ditch with water. Violation of rule No. 1.

18a Cole Valentine, owner and occupant:

Found manure pile 32 feet, hen-house 36 feet, hen yard, very foul, 1 foot from creek; stable 50 feet from creek. Garbage and refuse scattered over the ground along bank. Ground only a few inches above present level of water in stream; ordinary rise will bring the water much nearer previous items and submerge and surround some of them. Filthy place. Violation of rules No. 15 and No. 18.

19 W. W. Durland, owner—W. D. Wood, tenant:

Stable 30 feet, manure pile 20 feet. Otherwise yard clean. Violation of rule No. 18.

20 Mrs. Phoebe Baylis, owner:

Found two piles of garbage 45 feet from ditch leading into stream. Violation of rule No. 15.

21 L. E. Decker, owner—Contractor's barn and stable:

Found arm of main stream 50 feet long, 3 feet to 6 feet wide, full of water, extends into poultry yard and under edge of stable, with 20 to 40 horses. Large pile of manure 15 feet from arm of stream; a very bad yard. Privy 50 feet from main stream was panned by city of Brooklyn in September, 1896. On April 23, 1897, L. E. Decker notified Charles F. Gardner, the stream inspector, to remove the pans, which he declined to do. Decker removed the pans from the privy on April 27, 1897, and prohibited Gardner from replacing them.

Another privy behind the barn, 60 feet from arm of stream, was panned by city of Brooklyn at same time as the former one, but Decker has forbidden Gardner to clean it, and it is now full to the top.

Another large manure pile 40 feet from arm of stream. A very aggravated and wilful case of violation of rules No. 2, No. 7 and No. 18.

22 Willett C. Durland, owner— ———, tenant:

Found large pile of garbage and refuse 29 feet from water standing in swampy ditch leading to main stream. Violation of rule No. 15.

23 Charles Pabsi, owner:

Refuse with some garbage thrown on this vacant lot, across street from L. E. Decker's store, by other parties, said to be from Decker's store and others. There is an open ditch along street front of this lot, fronting on Merrick road, containing house sewage and house slops draining directly into main stream. This sewage and slops come from the open end of closed drain supposed to lead from the hotel situated diagonally across the corner from L. E. Decker's store. Directed the stream inspector to investigate the source of this sewage and slops. The vacant lot is not enclosed, but the line of the ditch would apparently fall outside the fence line. Violation of rules No. 11 (?) and No. 15.

24 Mrs. Jane Stuart, owner—Mrs. Jane Stuart and son Frederick, occupants:

Found hen house 14 feet from stream, and poultry yard fronting stream for 60 feet. Stable with no horse at present 40 feet from stream. Violation of rule No. 18.

25 Bernard Hendrickson, owner:

Found stable 33 feet, manure piles 30 feet and 33 feet, hen-house 20 feet from open ditch to main stream with water in it whenever it rains. Violation of rule No. 18.

26 W. D. Hendrickson, owner:

Found stable with two horses 40 feet from stream; manure piles 67 feet from stream and drains directly into same by furrows. Hog-pen with two pigs 26 feet from ditch to main stream; privy panned, but refuses to allow stream inspector Gardner to clean the same or to enter his land for the purpose of cleaning the banks of the stream. Violation of rules Nos. 2, 7 and 18.

27 John Dennis, owner:

Found stable with horse, 30 feet; hen-house 15 feet, and pig-pen with large accumulation of manure and in bad condition 30 feet from open ditch leading into main stream, 135 feet distant. Violation of rule No. 18.

28 Christopher E. Abrams, owner:

Found this a vacant lot with refuse and garbage thrown onto it, apparently by his neighbors adjoining. Violation of rule No. 15.

29 John W. Decker, owner—Stephen Decker, tenant:

Found large accumulation of garbage on ground 20 feet from water in marsh, and 35 feet from deep arm of stagnant water connected directly with main stream. Violation of rule No. 15.

In accordance with the provisions of section 71 of chapter 661 of the Laws of 1893, it is ordered that the board of health of the city of New York, be convened for the purpose of enforcing obedience in the cases named, to the rules and regulations made by this Board for the sanitary protection of the water supply of the borough of Brooklyn.

A copy of the rules and regulations adopted by this Board will be found on pages 309 to 316, inclusive, of the 15th annual report, a copy of which has been sent to you under a separate cover.

Very respectfully,

BAXTER T. SMELZER,

Secretary

NEW YORK, October 24, 1898

BAXTER T. SMELZER, M. D., *Secretary State Board of Health:*

Dear Sir.—At a special meeting of the board of health of the department of health, held this day, present, Hon. M. C. Murphy, president, and Commissioners William T. Jenkins, M. D., John B. Cosby, M. D., and Alvah H. Doty, M. D., your communication in respect to violations of the rules of the State Board of Health for the sanitary protection of the water supply of New York, complaint in respect to which was made to the State Board by the commissioner of water supply of this city, was considered and referred to the sanitary superintendent for inspection and report to the board within two days.

In acknowledging the receipt of your communication, the secretary was directed to inform you that no previous complaints re-

lating to the existence of said nuisances in the boroughs of Brooklyn and Queens of this city, have been received by this department, and the attention of this board was first called to the same by the State Board of Health. Had the attention of this department been called to the existence of these nuisances by the commissioner of water supply, pursuant to the provisions of section 1176 of chapter 378 of the Laws of 1897, the complaints would have received prompt attention, the necessary orders issued to abate the nuisances complained of, and the failure of the owners of property on which such nuisances existed to comply with the orders of the board within five days, would have been followed by the commencement of suit by the corporation counsel against said owners for non-compliance with the orders of the board of health.

Very respectfully,

C. GOLDERMAN,

Secretary pro tem.

NEW YORK, November 17, 1898

BAXTER T. SMELZER, M. D., *Secretary State Board of Health:*

Sir—At a meeting of the board of health of the department of health, held November 16, 1898, the sanitary superintendent, to whom was referred your communication of October 22d, relating to nuisances along the water supply of the borough of Brooklyn, reported that inspections had been made of the 29 locations complained of, and also of 17 additional localities, of which complaints were made, and orders of the board have been issued and served upon owners of premises affected. The secretary was directed to forward you copies of the complaints and recommendations made by inspectors, upon which orders were issued, which please find enclosed.

Very respectfully,

C. GOLDERMAN,

Secretary pro tem.

ALBANY, October 22, 1898

SMITH COX, *President Board of Health, town of Hempstead, Freeport, N. Y.:*

Dear Sir—Upon investigations made by this Board as provided by section 71, chapter 661 of the Laws of 1893, it is found that the following parties located in the town of Hempstead are violating rules made for the sanitary protection of the water supply of the city of Brooklyn, now the borough of Brooklyn:

VALLEY STREAM

1 Julius Gutsche, owner:

Found chicken yard 14 feet, hen-house 25 feet, stable (without horse), 33 feet, and privy not panned 47 feet from open ditch with water running in the main stream. Violation of rules Nos. 2 and 18.

2 Joseph Berkley, owner:

Found pig-pen 44 feet, stable 50 feet, manure pile 22 feet, privy, not panned 72 feet from bank of main stream. Bad accumulation of rubbish and garbage along bank of main stream within 20 feet of water. Violation of rules Nos. 2, 15 and 18.

3 Henry Strohmeier, owner:

Found privy, not panned 119 feet, chicken yard 12 feet, hen-house 62 feet from stream, stagnant arm of same. Violation of rules Nos. 2 and 18.

4 Hiram Fleming, owner:

Found privy, unpanned 120 feet, hen-house 41 feet, hen-yard 12 feet from stagnant arm of stream. Violation of rules Nos. 2 and 18.

5 Frederick Kash, owner:

Found privy panned, but less than 20 feet, garbage on ground 35 to 40 feet from stagnant arm of stream; hen-yard has open drain with water backed up in it from creek. Violation of rules Nos. 1, 15 and 18.

6 H. J. Ernst, owner—John Zeller, tenant:

Found pig-pen with two pigs 20 feet, manure pile at same 17 feet, stable with two horses 69 feet, large manure pile at same 45 feet, privy, not panned 84 feet from stream, west branch. Violation of rules Nos. 2 and 18.

7 Mrs. A. Miller, owner—Henry Combs, former tenant—William Burrows, present tenant:

Found privy, not panned 70 feet from stream, west branch. Violation of rule No. 2.

8 Benjamin Seaman, owner:

Found hen-house 72 feet, stable with barn yard and pile of manure in it 78 feet from Fowler's pond. Violation of rule No. 18.

9 J. E. Johnson, owner, Sing Sing, N. Y.—C. L. Wallace, agent, Rockville, Center, N. Y.—John Bookman, tenant:

Stable with one cow 72 feet, manure pile at same 72 feet, hen-house in use but in good condition, 42 feet from bank of Pines pond reservoir, water supply pond. Violation of rule No. 18.

10 Shepherd Abrams estate—Shepherd Abrams' widow, occupant—Sylvanus Johnson, also occupant:

Found pig-pen with four pigs 45 feet from stream; stable 64 feet from bank stream. Violation of rule No. 18.

11 Dennis Feeley, owner:

Found pig-pen with three pigs, in filthy condition, 22 feet from stagnant arm of private pond formed by dam built by Mrs. Wm. S. Hall, adjoining owner; the stagnant water is on Hall's land, 2 feet from Feeley's line. Pig pen moved to this position by Feeley in April, 1898, after notice from Brooklyn water department; large manure pile at former location of pig-pen 13 feet from stagnant water in same pond on Feeley's own land. Cow stable with one cow, in filthy condition 67 feet from first mentioned stagnant arm, draining into it. Stable with four horses 76 feet from edge of pond. Accumulations of refuse with some putrescible matter scattered about the yard; some within 50 feet and nearly all within 100 feet of the pond. Violation of rules Nos. 15 and 18.

SCHODACK BROOK

12 A. Hudse:

Found pig-pen, with two pigs, in bad condition, 60 feet from stream, and draining directly into it. Manure pile from same pen extends within 45 feet of stream. Violation of rule No. 18.

EAST MEADOW BROOKS

13 John C. Boyd:

Found stable with one horse, 46 feet from brook running into East Meadow brook. Poultry yard with over 200 head of poultry fronts on this brook for 150 feet. An artificial pond has been formed by damming the brook; pond 150 feet long by 10 to 15 feet wide and 1 to 3 feet deep; no stream enters it except springs in bottom; very filthy; privy panned. Violation of rule No. 18.

14 Robert Mott:

Found pig-pen removed, but accumulation of manure around the old pen there still. House slops thrown regularly on ground, 30 to 35 feet from bank of east branch of Meadow brook. Violation of rules Nos. 11 and 18.

15 Richard Hingle, owner—Guiseppe Vellone, tenant:

Found hen-house with 30 chickens 24 feet from open ditch with water running into main stream. Rabbit pen with seven rabbits, 18 feet from same ditch. House slops thrown into same ditch. Violation of rules Nos. 11, 15 and 18.

16 J. W. Barnum, owner—W. P. Stevenson, tenant:

Privy now 134 feet from private pond emptying into East Meadow brook. Privy not panned. Pile of garbage, slops and ashes 64 feet from pond. Violation of rules Nos. 2, 11 and 15.

MILBURN STREAM AND POND

17 John Holloway, owner—Webster Pearsall, tenant:

Found privy, not panned, 147 feet from bank of Milburn supply pond (storage reservoir). Cow stables with one cow 68 feet, hen-house 80 feet, accumulation of manure on ground reaching 70 feet to 100 feet from pond. Violation of rules Nos. 2 and 18.

NEWBRIDGE STREAM

18 T. W. Arms, owner, Boston navy yard—C. L. Wallace, agent, Rockville Center, N. Y.—O. B. Green, tenant:

Found garbage on ground 50 feet, hen-house 60 feet, privy, not panned, 92 feet from private pond emptying into Newbridge stream. Hen yard with 50 hens fronts open on pond for 50 feet.

Closed drain carrying house slops empties into open drain 62 feet from creek just below pond, thence direct drainage and flow into creek. Violation of rules Nos. 2, 11, 15 and 18.

WANTAGH PONDS AND STREAMS

19 R. G. Dun, owner, No. 314 Broadway, N. Y. —Geo. A. Barker, tenant:

Found 200 head of poultry in yards fronting (some open), for 80 feet, along private pond, with hen-houses 27 and 29 feet from water edge; ground slopes steeply to bank and drainage is direct. Several other poultry houses and yards within 100 feet of bank of pond; stable 68 feet from same. Violation of rule No. 18.

20 R. G. Dun, owner, "Dun Lake"—Theodore F. Corwin, foreman:

Found hen house 42 feet, stable with two horses and one cow 91 feet, large amount of manure extending from 90 feet to 115 feet from private pond, with steep fall to ground surface and direct drainage. Privy panned and 95 feet away from pond. Violation of rule No. 18.

21 Luther Lee:

Found hen house 37 feet, cow stable in bad condition, one cow and large accumulation of manure 100 feet from stream, but signs of direct drainage visible plainly. Privy 100 feet and panned. Violation of rule No. 18.

22 Mrs. Pauline Hannington, owner—R. E. Hannington, tenant:

Found duck yard fronting 200 feet along private pond on Wantagh creek. Duck house 4 feet from pond. Another poultry yard fronting along stream just below pond. Keep 3000 head of poultry, 500 of which have access to stream or pond. Water of pond and stream filthy from poultry. Violation of rule No. 18.

23 Geo. G. Smith:

Found privy, panned but only 19 feet from water course with water in it and 4 feet above it with direct drainage to it. Pig-pen with three pigs 46 feet, and hen-house 40 feet from same water course; 200 to 250 feet to main stream. Violation of rules Nos.

In accordance with the provisions of section 71 of chapter 661 of the Laws of 1893, you are hereby directed to convene the board of health of the town of Hempstead for the purpose of enforcing compliance in the cases mentioned, with the rules and regulations adopted by this Board for the sanitary protection of the water supply of the borough of Brooklyn.

A copy of the rules and regulations is herewith enclosed.

Very respectfully,

BAXTER T. SMELZER,

Secretary

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, north east corner of Fosters Meadow road and Merrick road.

By inspectors investigating complaint of the State Board of Health on contamination of source of Brooklyn water supply.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the position of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated northeast corner of Fosters Meadow road and Merrick road, Springfield, and found the facts as follows: Said premises consist of a saloon of which John Lucas of premises is lessee, and in violation of section 111 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A large pit is made in the ground to receive garbage about 60 feet from the high water mark of Simonson's pond. The said pit contains offensive garbage, and drainage from said pit contaminates the water of the said pond, which is used for drinking water in the borough of Brooklyn.

Recommend that the pit thereat for receiving garbage be disinfected, emptied, cleaned and filled with fresh earth, and the

practice of storing garbage in pits within 100 feet of the high water mark of the Simonson's pond be discontinued.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, west side, third house north of railroad station.

By the inspector while investigating complaint of State Board of Health on contamination of Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney, and S. McCallum, M. D., holding the position of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, west side, third house north of railroad station, Springfield, and found the facts as follows: Said premises consist of a dwelling of which W. W. Hendrickson of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The chicken house and chicken yard are located on slope 37 feet from Springfield stream, the water in which is used as a portion of the Brooklyn water supply; said chicken house and chicken yard are filthy with excreta, and during rain storms filthy liquids from same flow into said stream, contaminating the water therein.

Recommend that all chickens be removed from the chicken yard and chicken house; that said chicken house, chicken yard and grounds surrounding same be thoroughly cleaned and that

the maintenance of a chicken house or chicken yard within 50 feet of the high water mark of any spring, stream or water course be discontinued.

DANIEL T. KENNEY,
S. McCALLUM, M. D.,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road and railroad, northwest corner.

By the inspector while investigating complaint of State Board of Health on contamination of Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney, and S. McCallum, M. D., holding the position of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated northwest corner Springfield road and railroad, Springfield, and found the facts as follows: Said premises consist of a coalyard and stable, of which W. W. Durland of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The stable (3 horses) and large heap of manure are located 30 and 25 feet respectively from marsh and arm of stream, the water in which is used as a portion of the Brooklyn water supply.

Recommend that all horses be removed from the stable, all manure from the premises; that said stable and surrounding grounds be cleaned, and that the maintenance of a stable or the storing of manure within 50 feet of the high water mark of any

spring, stream or water course be discontinued, and that the storing of manure upon the premises be discontinued, unless the same is kept in water tight receptacles.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises Springfield road, west side, second house north of railroad station.

By the inspector, while investigating a complaint by the State Board of Health on contamination of the Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report that on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, west side, second house north of railroad station, Springfield, and found the facts as follows: said premises consist of a dwelling of which John H. Mills, of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The kitchen sink in the house is not trapped and the waste water of said sink discharges into a depression in yard five feet from house, and thereby natural drainage into marsh 35 feet distant. Said marsh borders and drains into Springfield stream, the water in which is used as a portion of the Brooklyn water supply, and as said marsh frequently submerged, the waste water from said sink contaminates the water in said stream.

Recommend that the kitchen sink in house be properly trapped, and that the waste water of said sink be made to discharge through a proper iron pipe with lead calked joints into a suitable

sized cess-pool with water tight sides and bottom, constructed not less than 50 feet from the high water mark of any spring, stream or water course and to be cleaned only by a licensed scavenger.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK.

Complaint and report of inspection in reference to premises located on Springfield road, near Higsbee road.

By the inspector, while investigating a complaint from the State Board of Health, on contamination of Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, near Higsbee road, Springfield, and found the facts as follows: said premises consist of a dwelling, of which Chas. E. Small, of premises, is owner of chickens and chicken house, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz:

A chicken house (20 chickens) is located rear of yard 10 feet from water in marsh abutting Springfield stream, the water in which is used as a portion of the Brooklyn water supply. Said marsh drains into said stream. The chicken house thereat is very filthy with excreta, which is washed into marsh during rain storms contaminating the water therein.

Recommend that all chickens be removed from the chicken house; that said chicken house and the grounds surrounding same

be thoroughly cleaned and that the maintenance of a chicken house within 50 feet of the high water mark of any spring, stream or water course be discontinued.

DANIEL T. KENNEY,
S. McCALLUM, M. D.,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises on Higsbee road, near Springfield road, Springfield.

By the inspector, while investigating a complaint by the State Board of Health on contamination of the Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report, that on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated on Higsbee road, near Springfield road, Springfield, and from the facts as follows: Said premises consist of a marsh land of which Mrs. Geo. Higsbee, of Higsbee road, Springfield, L. I., is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The marsh land lying between the property on Springfield road and the Springfield stream beginning at Higsbee road and extending south for a distance of about 400 feet is strewn with garbage, manure and offensive refuse, as said marsh is drained into said stream, the water in which is used as a portion of the Brooklyn water supply, said water is contaminated thereby.

Recommend that the marsh land lying between property on Springfield road and the Springfield stream, beginning at Higsbee

road and extending south for about 400 feet, be thoroughly cleaned and all garbage and manure and refuse removed therefrom.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises Springfield road, near Higsbee road, Springfield.

By the inspector, while investigating a complaint by the State Board of Health on contamination of the Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated on Springfield road, near Higsbee road, Springfield, and found the facts as follows: Said premises consist of a dwelling, of which John Everett, of Jamaica, L. I., is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The sink in the kitchen is not trapped, and the waste pipe therefrom discharges on the ground, and by natural drainage the offensive liquid matter is discharged into marsh land about 30 feet away and contaminates the water in Springfield stream into which the marsh drains, the water from which is used for the Brooklyn water supply.

Recommend that the sink in the kitchen be properly trapped; that the waste pipe from the sink be made to discharge into a

properly constructed cess-pool with water tight sides and bottom, and located not within 50 feet of the high water mark of any spring, stream or water course, and that the said cess-pool be emptied and cleaned only by a licensed scavenger.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises Foster's Meadow road, west side, second house North Merrick road.

By the inspector, investigating a complaint from the State Board of Health on contamination of the source of Brooklyn water supply from Simonson's stream.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report, that on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated on Foster's Meadow road, west side, second house, north of Merrick road, and found the facts as follows: Said premises consist of a dwelling and stable, of which James Watts, of premises, is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The stable, the floor of which is defective, containing two horses, is situated about 40 feet from a marsh, which drains into Simonson's stream, the water from which is used for the Brooklyn water supply and there is a large pile of manure on the ground thereat. The defects in floor allow leakage of filthy liquids, causing the earth beneath to be offensive and natural drainage from said stable and manure pile causes contamination of said stream.

Recommend that all horses be removed from the stable, and all manure be removed from the premises; that the stable and the grounds thereat be thoroughly cleaned; that the practice of maintaining a stable or collection of manure within 50 feet of the high water mark of any spring, stream or water course be discontinued; and that no manure be stored on the premises unless it be kept in water tight receptacles.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT OF THE CITY OF NEW YORK

Complaint and report of inspection in reference to premises west side Fosters Meadow road, 10th house North Merrick road.

By the inspector while investigating complaints made by the State Board of Health, on contamination of Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated west side of Fosters Meadow road, 10th house north of Merrick road, and found the facts as follows: Said premises consist of a dwelling and stable, of which D. Lamberson of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz:

A stable without flooring, containing two horses, a chicken house, a large heap of manure and a pig-sty (2 pigs) are all located within 40 feet of marsh ground containing a ditch, the water of which flows to Simonson's stream, which contributes

to the Brooklyn water supply. The bottom of said stable, chicken house and pig-sty and the grounds about them are filthy and offensive, and during rain storms, filthy liquids are washed into the said ditch and the water in the stream contaminated thereby.

Recommend that all pigs and all manure be removed from the premises; that all horses be removed from the stable and all chickens from the chicken house; that the stable, pig-sty, chicken house and the grounds thereat be thoroughly cleaned; that the maintenance of a stable or chicken house or collection of manure within 50 feet of the high water mark of any spring, stream or water course be discontinued, and that no manure be stored on the premises unless it be kept in water tight receptacles.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises west side Fosters Meadows road, 14th house north of Merrick road.

By the inspector while investigating complaints made by the State Board of Health, on contamination of Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated west side of Fosters Meadow road, 14th house north of Merrick road, and found the facts as follows: Said premises consist of a stable and dwelling of which Geo. Oswald of premises is owner, and, in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz:

The stable (two horses) chicken house (20 chickens) are located 25 feet from Simonson's stream the water in which is used as a portion of the Brooklyn water supply. The stable floor is defective, and the leakage through same renders the earth beneath same offensive with liquid filth. The chicken house is also filthy, and owing to the natural drainage and during rain storms filthy liquids are washed therefrom into said stream, contaminating the water therein.

Recommend that all horses be removed from the stable, all chickens from the chicken house; that said stable and chicken house be thoroughly cleaned, and that the maintenance of a stable or chicken house within 50 feet of the high water mark of any spring, stream or water course be discontinued.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises located on Springfield road, near Higsbee road.

By inspector on C. C. No. 739.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated on Springfield road, near Higsbee road, Springfield, and found the facts as follows: Said premises consist of a dwelling, of which A. F. Dingethal (tenant) of premises is owner of chicken yard and chickens, and, in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz:

A large chicken yard with about 40 chickens and a house for same, is located on the edge of a marsh and about 25 feet from Springfield stream which is a part of the Brooklyn water supply. The chicken yard and the house for same are filthy with excreta, which owing to the grade of the ground, flows into marsh during rain storms and as said marsh is frequently submerged, also flows into said stream, contaminating the water therein.

Recommend that all chickens be removed from the chicken house; that said chicken house, chicken yard and the grounds about the same be thoroughly cleaned, and that the maintenance of a chicken house or chicken yard within 50 feet of the high water mark of any spring, stream or water course be discontinued.

S. McCALLUM, M. D.,
DANIEL T. KENNEY,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises southeast corner Springfield road and Merrick road.

By the inspector, while investigating a complaint of the State Board of Health, on contamination of the Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated on southeast corner of Springfield road and Merrick road, Springfield, and found the facts as follows: Said premises consist of a hotel, of which Chas. W. Pietz of premises is owner, and, in violation of section 60 of the sanitary code, was found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

situated Springfield road, west side, first house south of Merrick road, Springfield, and found the facts as follows: Said premises consist of a dwelling, of which Henry Hendrickson of premises, is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

(1) The chicken yard, chicken house, containing chickens, heaps of garbage and offensive refuse all border a marsh which drains into adjoining Springfield stream, the water in which is used as a portion of the Brooklyn water supply, and the drainage from said garbage, refuse, chicken yard and chicken house, contaminates water in said stream. (2) The kitchen sink in the house is not trapped and the waste water of said sink discharges upon yard surface and thence by natural drainage into marsh which drains into stream, 25 feet distant, contaminating water therein.

Recommend, that all chickens be removed from the chicken house and chicken yard, and all garbage and refuse from the premises; that the chicken house, chicken yard and adjoining grounds be thoroughly cleaned and that the maintenance of a chicken yard or chicken house within 50 feet of the high water mark of any spring, stream or water course be discontinued. That the kitchen sink in the house be properly trapped and that the waste water of same be made to discharge through an iron pipe with lead calked joints into a cesspool of suitable size with water-tight sides and bottom, located not less than 50 feet from the high water mark of any spring, stream or water course, and said cesspool to be cleaned only by a licensed scavenger.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, west side, second house north of Merrick road.

By the inspector, while investigating a complaint of the State Board of Health on contamination of Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, second house north of Merrick road, Springfield, and found the facts as follows: Said premises consist of a dwelling, of which George Wigley, of Mineola, Long Island, is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

Garbage and offensive refuse is strewn on lot, bordering water in ditch in marsh, and which drains into Springfield stream, the water in which is used as a portion of the Brooklyn water supply. The kitchen sink in the house is not trapped and the waste water of said sink discharges upon yard surface and thence by natural drainage into open ditch in marsh, which drains into stream 40 feet distant, thus contaminating water in said stream.

Recommended, that all garbage and refuse be removed from the premises, said premises to be thoroughly cleaned and that the practice of storing garbage and offensive refuse thereat be discontinued. That the kitchen sink in the house be properly trapped, and that the waste water of said sink be made to discharge through an iron pipe with lead calked joints into a properly constructed cesspool with watertight sides and bottom, location not less than 50 feet from the high water mark of any spring, stream or water course. Said cesspool to be cleaned only by a licensed scavenger.

Note—John Decker, tenant.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

situated Springfield road, west side, first house south of Merrick road, Springfield, and found the facts as follows: Said premises consist of a dwelling, of which Henry Hendrickson of premises, is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

(1) The chicken yard, chicken house, containing chickens, heaps of garbage and offensive refuse all border a marsh which drains into adjoining Springfield stream, the water in which is used as a portion of the Brooklyn water supply, and the drainage from said garbage, refuse, chicken yard and chicken house, contaminates water in said stream. (2) The kitchen sink in the house is not trapped and the waste water of said sink discharges upon yard surface and thence by natural drainage into marsh which drains into stream, 35 feet distant, contaminating water therein.

Recommend, that all chickens be removed from the chicken house and chicken yard, and all garbage and refuse from the premises; that the chicken house, chicken yard and adjoining grounds be thoroughly cleaned and that the maintenance of a chicken yard or chicken house within 50 feet of the high water mark of any spring, stream or water course be discontinued. That the kitchen sink in the house be properly trapped and that the waste water of same be made to discharge through an iron pipe with lead calked joints into a cesspool of suitable size with water-tight sides and bottom, located not less than 50 feet from the high water mark of any spring, stream or water course, and said cesspool to be cleaned only by a licensed scavenger.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, west side, second house north of Merrick road.

By the inspector, while investigating a complaint of the State Board of Health on contamination of Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, second house north of Merrick road, Springfield, and found the facts as follows: Said premises consist of a dwelling, of which George Wigley, of Mineola, Long Island, is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

Garbage and offensive refuse is strewn on lot, bordering water in ditch in marsh, and which drains into Springfield stream, the water in which is used as a portion of the Brooklyn water supply. The kitchen sink in the house is not trapped and the waste water of said sink discharges upon yard surface and thence by natural drainage into open ditch in marsh, which drains into stream 40 feet distant, thus contaminating water in said stream.

Recommended, that all garbage and refuse be removed from the premises, said premises to be thoroughly cleaned and that the practice of storing garbage and offensive refuse thereat be discontinued. That the kitchen sink in the house be properly trapped, and that the waste water of said sink be made to discharge through an iron pipe with lead calked joints into a properly constructed cesspool with watertight sides and bottom, location not less than 50 feet from the high water mark of any spring, stream or water course. Said cesspool to be cleaned only by a licensed scavenger.

Note—John Decker, tenant.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, near Higsbee road, Springfield.

By the inspector, while investigating a complaint of the State Board of Health on contamination of Brooklyn water supply.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, near Higsbee road, Springfield, and found the facts as follows: Said premises consist of a privy house on premises occupied by Frank Elfrige, of which commissioner of water supply of the city of New York is in charge, and in violation of section 111, of the sanitary code, were found in a condition dangerous to life and detrimental to health for the following reasons; viz.:

The privy house thereat contains two pans; one of the pans is corroded and defective, and allows the filthy contents to flow on the ground, giving rise to offensive odors.

Recommend, that the defective pan in the privy house on premises occupied by Frank Elfrige be replaced by a perfect pan, and that the matter be referred to the commissioner of water supply of the city of New York.

S. McCALLUM, M. D.,
DANIEL T. KENNEY,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, near Higsbee road, Springfield.

By the inspector, investigating a complaint by the State Board of Health, on contamination of Brooklyn water supply.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated as Springfield road, near Higsbee road, Springfield, and found the facts as follows: Said premises consist of a dwelling, of which Charles E. Small, of Springfield road, Springfield, is agent, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The lead waste pipes from the sink (2) are connected with the earthenware house drain by defective cement joints, and the said drain which is exposed in the cellar is defective and foul odors escape. The waste water from kitchen sink is discharged through the house drain into a cesspool, the sides and bottom of which are not water tight, and the water of the Springfield stream, which is about 40 feet distant and which is used for the Brooklyn water supply, is contaminated by ground saturation.

Recommend that the sides and bottom of the cesspool thereat be made water tight; that the defective earthenware house drain be replaced by proper cast iron pipe with lead calked joints; that the lead waste pipes from the sink be connected with the said iron pipe with suitable fitting brass ferrules and lead calked joints, and that the cesspool be emptied only by a licensed scavenger.

S. McCALLUM, M. D.,
DANIEL T. KENNEY,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, northeast corner of Fosters Meadow and Merrick roads.

By inspector, investigating a complaint from the State Board of Health, on contamination of source of Brooklyn water supply.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated northeast corner of Fosters Meadow road and Merrick road, and found the facts as follows: Said premises consist of a saloon of which John Lucas of premises is lessee and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A large pit is made in the ground to receive garbage about 60 feet from the high water mark of Simonson's pond. The said pit contains offensive garbage, and drainage from said pit contaminates the water of the said pond which is used for drinking water in the borough of Brooklyn.

Recommend that the pit thereat for receiving garbage be disinfected, emptied and cleaned and filled with fresh earth, and the practice of storing garbage in pits within 100 feet of the high water mark of Simonson's pond be discontinued.

DANIEL T. KENNEY,
S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, northeast corner of Fosters Meadow road and Merrick road.

Simonson's pond and stream.

1 Mrs. Katherina Heil, owner.—John Lucas, tenant: Found cesspool with water-closet from house connected to it 133 feet from edge of Simonson's pond (storage reservoir). Garbage, refuse, slops and ashes on ground 85 feet from pond with fairly

direct drainage to it. Pig-pen in filthy condition, 93 feet, and pile of manure around same 87 feet, from pond; 10 feet to 15 feet fall from all those items to pond and drainage quite direct. Violations of rules Nos. 2, 11, 15 and 18.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated northeast corner of Merrick road and Fosters Meadow road and found the facts as follows: Said premises consist of a hotel and dwelling, of which Mrs. Katherine Heil, care of T. F. Archer, corner Fulton and Smith streets, Jamaica, owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The cesspool thereat receives discharge from the soil pipe of the water-closet in the house. The said cesspool is about 135 feet from the edge of Simonson's pond, the water of which is used for Brooklyn water supply. The walls and bottom are not water tight, and leakage through said walls and bottom saturates the ground and contaminates the water in the said pond.

Recommend that the walls and bottom of the cesspool thereat be made water-tight.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, west side Fosters Meadow road, first house north of Merrick road.

2 Pasquali Pietaro: Found stable with three horses 45 feet; accumulation of manure reaching 55 feet to 81 feet from pond; hen house 93 feet. Violation of rule No. 18.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated northeast corner of Fosters Meadow road and Merrick road, and found the facts as follows: Said premises consist of a saloon of which John Lucas of premises is lessee and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A large pit is made in the ground to receive garbage about 60 feet from the high water mark of Simonson's pond. The said pit contains offensive garbage, and drainage from said pit contaminates the water of the said pond which is used for drinking water in the borough of Brooklyn.

Recommend that the pit thereat for receiving garbage be disinfected, emptied and cleaned and filled with fresh earth, and the practice of storing garbage in pits within 100 feet of the high water mark of Simonson's pond be discontinued.

DANIEL T. KENNEY,
S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises northeast corner of Fosters Meadow road and Merrick road.

Simonson's pond and stream.

1 Mrs. Katherina Heil, owner.—John Lucas, tenant: Found cesspool with water-closet from house connected to it 133 feet from edge of Simonson's pond (storage reservoir). Garbage refuse, slops and ashes on ground 85 feet from pond with fairly

direct drainage to it. Pig pen in filthy condition, 93 feet, and pile of manure around same 87 feet, from pond; 10 feet to 15 feet fall from all those items to pond and drainage quite direct. Violations of rules Nos. 2, 11, 15 and 18.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated northeast corner of Merrick road and Fosters Meadow road and found the facts as follows: Said premises consist of a hotel and dwelling, of which Mrs. Katherina Heil, care of T. F. Archer, corner Fulton and Smith streets, Jamaica, owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The cesspool thereat receives discharge from the soil pipe of the water-closet in the house. The said cesspool is about 135 feet from the edge of Simonson's pond, the water of which is used for Brooklyn water supply. The walls and bottom are not water tight, and leakage through said walls and bottom saturates the ground and contaminates the water in the said pond.

Recommend that the walls and bottom of the cesspool thereat be made water-tight.

DANIEL T. KENNEY,
S. McCALLUM, M. D.,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, west side Fosters Meadow road, first house north of Merrick road.

2 Pasquali Pietaro: Found stable with three horses 45 feet; accumulation of manure reaching 55 feet to 81 feet from pond; hen house 93 feet. Violation of rule No. 18.

into a cesspool with water-tight sides and bottom, and through a properly trapped extra heavy iron drain; that the floors of the horse stalls be provided with a valley drain, properly trapped and connected with the said iron drain, and that the cesspool be constructed not less than 50 feet from said spring. That the cesspool be disinfected, emptied and cleaned by a licensed scavenger.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises
Fosters Meadow road, sixth house north of Merrick road.

4 James Watts, owner:

Found stable with one horse 31 feet from open ditch, containing water flowing to main stream 100 feet distant. Remaining part of large manure pile 30 feet from head of open ditch leading to main stream, except four or five feet of sandy soil intervening at lower end, placed there to close ditch. Not sufficient purification. Violation of rule No. 16.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated on Fosters Meadow road, west side, sixth house north of Merrick road, and found the facts as follows: Said premises consist of a dwelling and stable, of which James Watts of premises is owner, and in violation of section 60 of the sanitary code were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The stable, containing two horses, is located 31 feet from an open ditch, containing water which flows into Simonson's stream, the water from which is used for the Brooklyn water supply. The

stable floor and earth beneath are not drained, the floor defective and leakage through the same saturates the soil and enters the said water ditch, contaminating the water in the stream. Manure is piled in a large quantity about 40 feet from the said ditch and liquid filth from the manure contaminates the water in the stream.

Recommend that all horses be removed from the stable, and the stable and surrounding ground thoroughly cleaned, and that the maintenance of a stable within 50 feet of the high-water mark of any spring, stream or water-course be discontinued. That all manure be removed from the premises; that the practice of storing manure on the premises be discontinued, unless the said manure be kept in water-tight receptacles; said receptacles to be placed not less than 50 feet from the high-water mark of any spring, stream or water-course.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises corner Central avenue and Fosters Meadow road.

5 Herman estate.—Peter and John Herman, heirs.—John Herman, tenant:

Found stable, with two horses, 31 feet; manure pile, 20 feet. Garbage on ground, 9 feet, and slops on ground, 5 feet from main stream. Privy has been panned and 31 feet from stream. Violation of rules Nos. 11, 15 and 18.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898 we personally examined and carefully inspected the premises situated Central avenue and Fosters Meadow road, and found the facts as follows: Said premises consist of a hotel and stables, of which

into a cesspool with water-tight sides and bottom, and through a properly trapped extra heavy iron drain; that the floors of the horse stalls be provided with a valley drain, properly trapped and connected with the said iron drain, and that the cesspool be constructed not less than 50 feet from said spring. That the cesspool be disinfected, emptied and cleaned by a licensed scavenger.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises
Fosters Meadow road, sixth house north of Merrick road.

4 James Watts, owner:

Found stable with one horse 31 feet from open ditch, containing water flowing to main stream 100 feet distant. Remaining part of large manure pile 30 feet from head of open ditch leading to main stream, except four or five feet of sandy soil intervening at lower end, placed there to close ditch. Not sufficient purification. Violation of rule No. 16.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated on Fosters Meadow road, west side, sixth house north of Merrick road, and found the facts as follows: Said premises consist of a dwelling and stable, of which James Watts of premises is owner, and in violation of section 60 of the sanitary code were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The stable, containing two horses, is located 31 feet from an open ditch, containing water which flows into Simonson's stream, the water from which is used for the Brooklyn water supply. The

stable floor and earth beneath are not drained, the floor defective and leakage through the same saturates the soil and enters the said water ditch, contaminating the water in the stream. Manure is piled in a large quantity about 40 feet from the said ditch and liquid filth from the manure contaminates the water in the stream.

Recommend that all horses be removed from the stable, and the stable and surrounding ground thoroughly cleaned, and that the maintenance of a stable within 50 feet of the high-water mark of any spring, stream or water-course be discontinued. That all manure be removed from the premises; that the practice of storing manure on the premises be discontinued, unless the said manure be kept in water tight receptacles; said receptacles to be placed not less than 50 feet from the high-water mark of any spring, stream or water-course.

S. McCALLUM, M. D.,
DANIEL T. KENNEY,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises corner Central avenue and Fosters Meadow road.

5 Herman estate.—Peter and John Herman, heirs.—John Herman, tenant:

Found stable, with two horses, 31 feet; manure pile, 20 feet. Garbage on ground, 9 feet, and slops on ground, 5 feet from main stream. Privy has been panned and 31 feet from stream. Violation of rules Nos. 11, 15 and 18.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated Central avenue and Fosters Meadow road, and found the facts as follows: Said premises consist of a hotel and stables, of which

HEALTH DEPARTMENT CITY OF NEW YORK.

Complaint and report of inspection in reference to premises
Fosters Meadow road, west side, north of Central avenue.

7 Louis Shaw, owner:

Found large manure pile 95 feet from main stream, with direct flow and seepage visible all the way to stream. Very bad. Violation of rule No. 18.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated on Fosters Meadow road, west side, north of Central avenue, and found the facts as follows: Said premises consist of a dwelling and stable, of which Louis Shaw, of premises, is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

1 The stable, wherein five horses are kept, is located 95 feet from Simonson's stream, which is used for Brooklyn water supply. The stable floor is defective and the leakage through same renders the earth beneath very filthy and offensive, and flows down the incline into said stream, contaminating water therein.

2 Large quantities of manure is stored at end of stable, and filthy liquids from said manure flow down the incline to stream, contaminating water therein.

Recommend that all offensive earth be removed from beneath the stable floor, and the ground space cleaned, disinfected, cemented and so graded and drained as to discharge all surface water and liquid matter into a cesspool, with water-tight sides and bottom, by and through a properly trapped, extra heavy iron drain; that the floors of the horse stalls be provided with a valley drain, properly trapped, and connected with the drain, and that the said cesspool be constructed not nearer than 50 feet from the said stream. That all manure be removed from the premises.

and the ground thereat be thoroughly cleaned, and that the practice of storing manure thereat be discontinued, unless the said manure be kept in water-tight receptacles, said receptacles to be placed not less than 50 feet from the high-water mark of any spring, stream or water-course; that the cesspool be disinfected, emptied and cleaned by a licensed scavenger.

DANIEL T. KENNEY,
S. McCALLUM, M. D.,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises,
Springfield avenue and Southern railroad, Springfield.

Springfield Stream and Pond

9 A. Leonhardt, owner:

Found chicken yard with filthy head poultry fronting on branch of main stream for 200 feet. Manure pile from stable 55 feet from end of ditch leading to same branch, with drainage to ditch direct and purification insufficient. Violation of rules Nos. 18 and 19.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated at Springfield avenue and Southern railroad, Springfield, and found the facts as follows: Said premises consist of a dwelling, stable and chicken yard of which A. Leonhardt, of premises, is owner, and in violation of section 60 of the sanitary code were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

HEALTH DEPARTMENT CITY OF NEW YORK.

Complaint and report of inspection in reference to premises Fosters Meadow road, west side, north of Central avenue.

7 Louis Shaw, owner:

Found large manure pile 95 feet from main stream, with direct flow and seepage visible all the way to stream. Very bad. Violation of rule No. 18.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 25th day of October, 1898, we personally examined and carefully inspected the premises situated on Fosters Meadow road, west side, north of Central avenue, and found the facts as follows: Said premises consist of a dwelling and stable, of which Louis Shaw, of premises, is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

1 The stable, wherein five horses are kept, is located 95 feet from Simonson's stream, which is used for Brooklyn water supply. The stable floor is defective and the leakage through same renders the earth beneath very filthy and offensive, and flows down the incline into said stream, contaminating water therein.

2 Large quantities of manure is stored at end of stable, and filthy liquids from said manure flow down the incline to stream, contaminating water therein.

Recommend that all offensive earth be removed from beneath the stable floor, and the ground space cleaned, disinfected, cemented and so graded and drained as to discharge all surface water and liquid matter into a cesspool, with water-tight sides and bottom, by and through a properly trapped, extra heavy iron drain; that the floors of the horse stalls be provided with a valley drain, properly trapped, and connected with the drain, and that the said cesspool be constructed not nearer than 50 feet from the said stream. That all manure be removed from the premises.

and the ground thereat be thoroughly cleaned, and that the practice of storing manure thereat be discontinued, unless the said manure be kept in water-tight receptacles, said receptacles to be placed not less than 50 feet from the high-water mark of any spring, stream or water-course; that the cesspool be disinfected, emptied and cleaned by a licensed scavenger.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises,
Springfield avenue and Southern railroad, Springfield.

Springfield Stream and Pond

9 A. Leonhardt, owner:

Found chicken yard with filthy head poultry fronting on branch of main stream for 200 feet. Manure pile from stable 55 feet from end of ditch leading to same branch, with drainage to ditch direct and purification insufficient. Violation of rules Nos. 18 and 19.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated at Springfield avenue and Southern railroad, Springfield, and found the facts as follows: Said premises consist of a dwelling, stable and chicken yard of which A. Leonhardt, of premises, is owner, and in violation of section 60 of the sanitary code were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A chicken yard is located on the marsh land which is bordered by a stream, the water from which is used for the Brooklyn water supply. A stable with a defective wooden floor and a heap of manure are located on the edge of the marsh. Filthy liquids from the stable and manure heap enter the marsh and the water in the stream, which is not more than 50 feet from the stable, is contaminated by natural drainage with filth from the stable, manure heap and chicken yard.

Recommend that all horses be removed from the stable and all chickens from the chicken yard; that all manure be removed from the premises; that the stable, chicken yard and grounds thereat be thoroughly cleaned; that the maintenance of any stable, chicken yard or collection of manure within 50 feet of the high water mark of any spring, stream or water course be discontinued, and that no manure be stored on the premises unless it be kept in water tight receptacles.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises corner of Springfield road and Southern railroad, Springfield.

10 E. H. Thompson, owner:

Found manure pile at stable, with three horses, 91 feet from private pond, with strong fall and drainage. Violation of rule No. 18.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated corner Springfield road and Southern railroad, Spring-

field, and found the facts as follows: Said premises consist of a store, dwelling and stable, of which E. H. Thompson, of premises, is owner, and in violation of section 60 of the sanitary code were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A stable (three horses) is located on a deep slope 91 feet from a small pond, the water of which flows into the Springfield stream, which is a portion of the Brooklyn water supply. A large quantity of manure is stored outside of the stable on said slope and an equal distance from said pond. The stable floor is defective and the earth beneath is very offensive with liquid filth, owing to the heavy slope of the ground thereat allowing natural drainage, and during heavy rain storms filthy liquids from said manure pile and said stable floor flow into said pond, contaminating the water therein.

Recommend that all horses be removed from the stable and all manure from the premises; that the stable and surrounding grounds be thoroughly cleaned; that the maintenance of a stable or the collection of manure within 130 feet of the high-water mark of any lake, pond or reservoir be discontinued; that no manure be stored upon the premises unless same is kept in water-tight receptacles.

DANIEL T. KENNEY,
S. McCALLUM, M. D.,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises Willow place, near Lincoln avenue, Springfield.

11 T. W. Spaulding, owner:

Found horse stable 35 feet, manure pile and refuse 15 feet, chicken house and yard 8 feet from bank of private pond. Violation of rule No. 18.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated on Willow place, near Lincoln avenue, Springfield, and found the facts as follows: Said premises consist of a stable and chicken house, of which T. W. Spaulding, of premises, is owner, and, in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A stable (one horse) without any flooring is located 30 feet from a pond, the water from which is used for the Brooklyn water supply, and a chicken-house and yard are located four feet from the pond. The water in the pond is contaminated with filth from these structures by natural drainage. A pile of manure 30 feet from the pond contaminates the water in said pond with liquid filth, washed down by rainstorms.

Recommend that all manure be removed from the premises; that all horses be removed from the stable; that all chickens be removed from the chicken-house and yard; that the stable, chicken-house and the grounds thereat be thoroughly cleaned; that the maintenance of any stable, chicken-house, chicken-yard or collection of manure within 50 feet of the high water of any spring, stream or water-course be discontinued, and that no manure be stored on the premises, unless it be kept in water-tight receptacles.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises located on Springfield road, near Mills avenue, Springfield.

12 E. H. Furman, owner:

Found poultry yard, with 30 hens, fronting on stream for 100 feet or more. Violation of rule No. 18.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: that on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated on Springfield road, near Mills avenue, Springfield, and found the facts as follows: Said premises consist of a dwelling, of which Aaron H. Furman, of premises, is owner, and, in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A large poultry yard, containing 30 chickens, fronts upon Springfield stream, which is a part of the Brooklyn water supply. Said yard is filthy with excreta, which, owing to the grade of the ground, flows into said stream during rainstorms, causing contamination of water therein.

Recommend that all chickens be removed from the poultry yard; that said poultry yard be thoroughly cleaned and that the maintenance of a poultry yard within 50 feet of any high-water mark of any stream, spring or water-course be discontinued.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises Springfield road, near Higsbee road, Springfield.

13 Mrs. Geo. L. Higsbee, owner—H. Leseur, tenant:

Found house drain with slops flowing into the ditch leading into stream. Refuse and garbage on the ground. Violation of rules Nos. 11 and 15.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report that on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated on Springfield road, near Higsbee road, Springfield, and found the facts as follows: Said premises consist of a dwelling, of which Mrs. Geo. Higsbee, of Higsbee road, Springfield, is owner, and, in violation of section 60 of the sanitary code, was found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The kitchen sink in the house is not trapped, and the waste pipe of said sink discharges into a ditch 10 feet from said house and flows by natural drainage into Springfield stream, which is used as a portion of the Brooklyn water supply, thus contaminating the water in said stream. The surface of yard is strewn with garbage and offensive refuse, which, owing to the grade of the ground is washed into said stream during rain storms, contaminating the water therein.

Recommend that the kitchen sink in the house be properly trapped, that the waste pipe of said sink be made to discharge into a properly constructed cesspool with water tight sides and bottom, and located not less than 50 feet from the high-water mark of any spring, stream or water course. Said cesspool to be cleaned by a licensed scavenger. That the yard surface be thoroughly cleaned and all garbage and refuse removed therefrom.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises Springfield road, near Higsbee road, Springfield.

14 Henry Hendrickson, owner:

Found horse stable 41 feet; hen house 43 feet from stream arm which is on land of Mrs. Geo. L. Higsbee, who refuses permission to fill up this arm of the stream. Also refuse scattered on ground. Violation of rules Nos. 15 and 18.

To the Board of Health:

We, S. McCallum, M. D. and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report that on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated at Springfield road, near Higsbee road, Springfield, and found the facts as follows: Said premises consist of a dwelling and stable of which Henry Hendrickson of premises is owner, and, in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A stable (1 horse), and a chicken house containing 20 chickens is located 10 feet from a marsh, abutting Springfield stream, said stream being a portion of the Brooklyn water supply. Said marsh is frequently submerged and drains into said stream. The chicken house is very filthy with excreta. The earth floor of stable is saturated with filthy liquids, and owing to the grade of the ground, said excreta and filthy liquids flow into the marsh during rain storms, contaminating water in said marsh by such flow and by ground saturation.

The waste pipe of kitchen sink in the house and which is not trapped, discharges upon the yard surface and flows by natural drainage into said marsh, which drains into said stream, contaminating the water therein.

Recommend that all chickens be removed from the chicken house, and all horses removed from the stable; that the said chicken house and stable be thoroughly cleaned, and that the maintenance of any chicken house or stable within 50 feet of the high-water mark of any spring, stream or water course be discontinued; that the kitchen sink be properly trapped and that

the waste pipe therefrom be made to discharge into a properly constructed cesspool with water-tight sides and bottom; the said cesspool not to be located within 50 feet of the high-water mark of any spring, stream or water course. and that the said cesspool be cleaned only by a licensed scavenger.

Note.—The refuse complained of was found on land belonging to Mrs. Higsbee, on whom a separate order is issued.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises Springfield road, near Higsbee road, Springfield.

15 Thomas Foster, owner—A. F. Dingthal, tenant:

Found poultry yard with 30 to 40 head of poultry edges on marsh, overflows at ordinary high water. Garbage and animal refuse on ground in and bordering on the marsh. Violation of rules No. 15 and No. 18.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report that on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated at Springfield road, near Higsbee road, Springfield, and found the facts as follows: Said premises consist of a dwelling of which Thomas Foster of Willow avenue, near Lincoln avenue, Springfield is owner, and, in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The waste pipe of kitchen sink in the house discharges into a depression in the marsh 20 feet from said house, and as said marsh is frequently submerged and drains into the Springfield

stream, which is a part of the Brooklyn water supply, the water in the said stream is contaminated thereby. Said sink is not trapped.

Recommend that the kitchen sink in the house be properly trapped; that the waste water of said sink be discharged through an iron pipe with lead calked joints into a cesspool of suitable size with water-tight sides and bottom, said cesspool to be constructed not less than 50 feet from the high-water mark of any stream, spring or water course, and to be emptied only by a licensed scavenger.

Note.—Made separate complaint against A. F. Dingthal (tenant) about poultry yard. The garbage is on the property owned by Mrs. Geo. Higsbee, upon which a separate complaint has been forwarded.

DANIEL T. KENNEY,
S. McCALLUM, M. D.,

Sanitary inspectors

A true record.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises Springfield road, north of railroad station, Springfield.

16 Benjamin Shanck, owner:

Hen-house 4 feet, stable 24 feet from stream. Hen-yard fronts on stream. Privy panned but only 24 feet from stream. House drain direct to with 24 feet of stream, thence flows into depression and reaches stream after imperfect purification. Hen-house filthy. Violation of rules No. 1, No. 11 and No. 18.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report that on the 27th day of October, 1898, we personally examined and carefully inspected the premises

situated at Springfield road, north of railroad station, Springfield, and found the facts as follows: Said premises consist of a dwelling and stable, of which Benjamin Shanck of premises is owner, and, in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A large chicken yard containing 20 chickens fronts on Springfield stream, which is a part of the Brooklyn water supply. A chicken house and a stable are located 4 and 24 feet respectively from said stream. The chicken yard and chicken house are filthy with excreta. The stable floor is defective, and the leakage through same renders the earth beneath offensive with liquid filth, which, owing to the grade of the ground, flows into said stream during rain storms, contaminating the water therein.

The waste water from the kitchen sink in the house discharges upon the surface of the yard and flows by natural drainage into said stream, contaminating the water therein; said sink is not trapped.

Recommend that all horses be removed from the stable, all chickens from the chicken house and chicken yard; that said stable, chicken house and chicken yard and the surrounding ground be thoroughly cleaned, and that the maintenance of any stable, chicken house or chicken yard within 50 feet of the high-water mark of any spring, stream or water course be discontinued. That the waste pipe of the kitchen sink in the house be made to discharge into a cesspool of suitable size with water-tight sides and bottom, said cesspool to be constructed not less than 50 feet from the high-water mark of any spring, stream or water course, and that said sink be properly trapped, said cesspool to be emptied by a licensed scavenger only.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspector

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, thirteenth house north of railroad station, Springfield.

17 Samuel J. Styles, sr., owner:

Found manure pile 11 feet from open ditch, containing water and emptying into main stream, 45 feet distant; stable with two or three horses 23 feet from another open ditch with water emptying into stream. Hen-house 25 feet from latter ditch.

Violation of rule No. 18.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, thirteenth house north of railroad station, Springfield, and found the facts as follows: Said premises consist of a dwelling, stable, etc., of which Samuel J. Styles, sr., of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A stable (2 horses) is located 12 feet from a ditch, containing water which flows into the Springfield stream, which supplies water for the Brooklyn water supply, and a manure heap on the edge of said ditch. A filthy chicken house is about 25 feet from a ditch flowing into said stream. There is no sink in the house, and all waste water is thrown on the ground, and enters the stream by natural drainage.

The water in said stream is contaminated with filthy liquids from the stable, chicken house and the waste water from the house.

Recommend that all manure be removed from the premises, that all horses be removed from the stable and all chickens from the chicken house; that the stable, chicken house and grounds thereat be thoroughly cleaned; that the maintenance of a stable, chicken house or collection of manure within 50 feet of the high

water mark of any spring, stream or water course be discontinued; that no manure be stored on the premises unless it be kept in watertight receptacles; that a properly trapped sink be provided in the house; that the waste water from the house be made to discharge through a proper iron pipe with lead calked joints into a properly constructed cesspool with water tight sides and bottom, located not nearer than 50 feet from the high water mark of any spring, stream or water course, and that the cesspool be emptied only by a licensed scavenger.

DANIEL T. KENNEY,
S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspector in reference to premises, Springfield road, tenth house north of railroad station, Springfield.

18 Cole Valentine, owner, and John Mack, tenant:

Found privy panned 25 feet and another, both used, 19 feet from open ditch with water. Violation of rule No. 1.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, tenth house north of the railroad station, and found the facts as follows: Said premises consist of a dwelling, of which Cole Valentine of adjoining house, Springfield road, Springfield, is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The yard bordering on the Springfield stream is filthy with garbage, old leather and other refuse, storm water washes filth from the yard to the stream, contaminating the water there, which is used for the Brooklyn water supply. The waste water

from the premises (no sink) is thrown on the ground, and by means of a ditch carrying overflow from the spring thereat is conveyed to the stream, contaminating the water therein.

Recommend that the ground space bordering on the stream be thoroughly cleaned and all offensive matter removed therefrom; that the practice of throwing offensive refuse on the ground thereat be discontinued; that a properly trapped sink be constructed in the house provided with a proper iron waste pipe with lead calked joints; that all waste water from the premises be discharged through said sink waste pipe into a properly constructed cesspool with watertight sides and bottom, located not nearer than 50 feet from the high water mark of any spring, stream or water course, and that the cesspool be emptied only by a licensed scavenger.

Note.—Premises are occupied by Wm. Decker and John Mack.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, ninth house north of railroad station, Springfield.

18 Cole Valentine, owner and tenant:

Found manure pile 32 feet. Hen-house, 36 feet. Hen yard very foul, 1 foot from creek; stable 50 feet from creek. Garbage and refuse scattered over the ground along bank. Ground only a few inches above present level of water in stream, ordinary rise will bring the water much nearer previous items and submerge and surround some of them. Filthy place. Violations of rules Nos. 15 and 18.

To the Board of Health:

We, Daniel T. Kenney, and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October,

1898, we personally examined and carefully inspected the premises situated Springfield road, ninth house north of railroad station, Springfield, and found the facts as follows: Said premises consist of a dwelling, stable, etc., of which Cole Valentine of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A stable, a heap of manure and a chicken house are located within 35 feet of a creek leading to Springfield stream, the water of which is used for the Brooklyn water supply.

A filthy chicken yard, strewn with garbage, is on the border of the said stream.

The waste water from the kitchen (sink not trapped) is discharged through the waste pipe on the ground, about 50 feet distant from the stream. The water in said stream is contaminated by natural drainage and rain storms with filth from the said stable, chicken house and yard, manure heap and waste water.

Recommended that all manure be removed from the premises, all horses from the stable and all chickens from the chicken house; that the stable, chicken house and chicken yard and surrounding grounds be thoroughly cleaned; that the maintenance of a stable, chicken house or yard or collection of manure within 50 feet of the high water mark of any spring, stream or water course be discontinued; that no manure be stored on the premises unless it be kept in water tight receptacles; that the sink in the kitchen be properly trapped, and that the waste pipe therefrom made to discharge into a properly constructed cesspool with watertight sides and bottom, located not nearer than 50 feet from the high water mark of any spring, stream or water course, and that the cesspool be emptied only by a licensed scavenger.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, west side, seventh house north railroad station, Springfield.

19 W. W. Durland, owner.—W. D. Wood, tenant:

Stable 30 feet; manure pile 20 feet. Otherwise yard clean. Violation of rule No. 18.

To the Board of Health:

We, Daniel T. Kenny and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated at Springfield road, west side, seventh house north of railroad station, and found the facts as follows: Said premises consist of a dwelling and stable northwest corner Springfield road and railroad, Springfield, of which W. W. Durland is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

1 Stable (1 horse), heap of manure and garbage 30 and 20 feet respectively from Springfield stream, the water in which is used as a portion of the Brooklyn water supply, and the drainage from same contaminates water in said stream. 2 That the kitchen sink in the house is not trapped and that the waste water of same discharges on the yard surface, and flows by natural drainage into stream 45 feet distant and contaminates water in said stream.

Recommend, that all horses be removed from the stable, all garbage and manure removed from the premises; that said stable and the grounds thereat be thoroughly cleaned; that the maintenance of a stable or the storing of manure within 50 feet of the high-water mark of any stream, spring or water course be discontinued, and that all manure be kept in water-tight receptacles. That the kitchen sink in house be properly trapped and the waste water of said sink be made to discharge through an iron

pipe with lead calked joints into a cesspool of suitable size with water-tight sides and bottom, said cesspool to be constructed not less than 50 feet from the high-water mark of any spring, stream or water course, and to be cleaned only by a licensed scavenger.

S. McCALLUM, M. D.,
DANIEL T. KENNEY,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, near west side, second house south of Southern railroad, Springfield.

20 Mrs. Phoebe Baylis, owner:

Found two piles of garbage 45 feet from ditch leading into stream. Violation of rule No. 15.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report that on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated on Springfield road, west side, second house south of Southern railroad, and found the facts as follows: Said premises consist of a dwelling of which Mrs. Phoebe Baylis of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

Piles of garbage and offensive refuse 8 feet from open ditch with water which connects with the Springfield stream, the water in which is used as a portion of the Brooklyn water supply, and the drainage from same contaminates water in said stream. The sink in the house is not trapped, and the waste water of same discharges into ditch which communicates with Springfield stream, contaminating water therein.

Recommend that all garbage and refuse be removed from the premises, the surrounding grounds be thoroughly cleaned, and that the practice of allowing garbage and refuse to accumulate on premises be discontinued; that the kitchen sink in house be properly trapped, and that the waste water of said sink be made to discharge through an iron pipe with lead calked joints, into a suitable sized cesspool with water-tight sides and bottom, said cesspool to be constructed not less than 50 feet from the high-water mark of any spring, stream or water course, and to be cleaned by a licensed scavenger only.

DANIEL T. KENNEY,

S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, northwest corner of Springfield road and Merrick road.

21 L. E. Decker, owner—Contractor's barn and stable:

Found arm of main stream 50 feet long, 3 feet to 6 feet wide, full of water, extends into poultry yard and under edge of stable, with 20 to 40 horses. Large pile of manure 15 feet from arm of stream; a very bad yard. Privy 50 feet from main stream was panned by city of Brooklyn in September, 1896. On April 23, 1897, L. E. Decker notified Charles F. Gardner, the stream inspector, to remove the pans, which he declined to do. Decker removed the pans from the privy on April 27, 1897, and prohibited Gardner from replacing them. Another privy behind the barn 60 feet from arm of stream was panned by city of Brooklyn at the same time as the former one, but Decker has forbidden Gardner to clean it, and it is now full to the top. Another large manure pile 40 feet from arm of stream. A very aggravated and wilful case of violation of rules Nos. 2, 7 and 18.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report that on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated at northwest corner of Springfield road and Merrick road, and found the facts as follows: Said premises consist of a dwelling, store and stable of which L. E. Decker of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The sink in the kitchen is not trapped, and the waste pipe therefrom discharges all waste water into a wooden gutter which drains into the Springfield stream, contaminating the water of said stream which is used for the Brooklyn water supply. A stable (7 horses), a chicken house and yard (containing chickens and ducks), a heap of manure are located on an arm of the Springfield stream, drainage from said stable, chicken house and yard, which are all filthy—contaminates the water in said stream. A man-hole in the stable is full of offensive stable refuse and is used for draining the stable. The water in the stream is contaminated by the contents of said man-hole by ground saturation. A privy vault located on sloping ground about 50 feet from the main stream is not water tight, is nearly full of night soil, and the water in the stream is contaminated by said privy vault by ground saturation.

Recommend that the sink in the kitchen be properly trapped; that the waste pipe from the sink be made to discharge into a properly constructed cesspool with water-tight sides and bottom, located not nearer than 50 feet from the high-water mark of any spring, stream or water course; that the cesspool be emptied only by a licensed scavenger; that all horses be removed from the stable, and all chickens and ducks from the chicken house and yard; that all manure be removed from the premises; that the stable, chicken house and yard and the grounds thereat be thoroughly cleaned; that the man-hole in the stable be emptied,

cleaned and filled with fresh earth; that the maintenance of a stable, chicken house or yard or collection of manure within 50 feet of the high-water mark of any spring, stream or water course be discontinued; that no manure be stored on the premises unless it be kept in water-tight receptacles; that the privy vault thereat be disinfected, emptied and cleaned by a licensed scavenger and filled with fresh earth, and the use of said vault as a receptacle for human excreta be discontinued.

Note—The privy house behind the barn contains pans which were clean at the time of inspection.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, first house north of Merrick road, Springfield.

22 Willett C. Durland, owner.— ————, tenant:

Found large pile of garbage and refuse 29 feet from water standing in swampy ditch leading to main stream. Violation of rule No. 15.

To the Board of Health:

We, S. Callum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report that on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated on Springfield road, first house north of Merrick road, Springfield, and found the facts as follows: Said premises consist of a dwelling, chicken house, etc., of which Willard C. Durland of Jamaica, L. I., is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A heap of offensive garbage, ashes, etc., a chicken house and chicken yard are located within 20 feet of the wet marsh which drains to the Springfield stream, the water of which is used for the Brooklyn supply.

The waste pipe from the kitchen sink (untrapped) discharges filthy waste water from the sink on the ground sloping to the marsh.

The chicken house, yard, garbage heap and waste water from the house contaminates the water in said stream during rain storms and by natural drainage.

Recommend that all chickens be removed from the chicken house and yard; that the chicken house, chicken yard and grounds thereat be thoroughly cleaned and all garbage and other offensive matter removed; that the maintenance of a chicken house or chicken yard within 50 feet of the high-water mark of any spring, stream or water course be discontinued; that the sink in the kitchen be properly trapped, and the waste pipe therefrom made to discharge into a properly constructed cesspool with water-tight sides and bottom, located not nearer than 50 feet from the high-water mark of any spring, stream or water course, and that the cesspool be emptied only by a licensed scavenger.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, vacant lots, southwest corner of Springfield and Merrick roads.

23 Charles Pabst, owner:

Refuse with some garbage thrown on this vacant lot, across street from L. E. Decker's store, by other parties said to be from Decker's store and others. There is an open ditch along street front of this lot, fronting on Merrick road, containing house

sewage and house slops draining directly into main stream. This sewage and slops come from the open end of closed drain supposed to lead from the hotel situated diagonally across the corner from L. E. Decker's store. Directed the stream inspector to investigate the source of this sewage and slops. The vacant lot is not enclosed, but the line of the ditch would apparently fall outside the fence line. Violation of rules No. 11 (?) and No. 15.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report that on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated vacant lot on southwest corner of Springfield road and Merrick road, and found the facts as follows: Said premises consist of a vacant lot corner Fulton avenue and Rockaway road, of which Charles Pabst of Jamaica is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The surface of lot is strewn with garbage and refuse near open water in ditch which leads to Springfield stream, the water in which is used as a portion of the Brooklyn water supply, thus contaminating the water in said stream.

Recommend that the surface of lot thereat be thoroughly cleaned, all garbage and refuse removed therefrom, and that the practice of throwing garbage and refuse on said lot be discontinued.

Note—The pans of water closets clean at time of inspection. Lot not fenced. Slops and filthy water in said ditch comes from fixtures in hotel at southeast corner of Merrick road and Springfield road, upon which separate complaints have been forwarded.

S. McCALLUM, M. D.,
DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, north of Railroad station, Springfield.

24 Mrs. Jane Stuart, owner.—Mrs. Jane Stuart and son Frederick, occupants: Found hen house 14 feet from stream and poultry yard fronting stream for 60 feet. Stable with no horse at present, 40 feet from stream. Violation of rule No. 18.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 27th day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, north of railroad station, Springfield, and found the facts as follows: Said premises consist of dwelling and poultry yard, of which Jane Stuart of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A large chicken yard, containing 20 chickens and a house for same, fronts on Springfield stream, which is a portion of the Brooklyn water supply. Said chicken yard and chicken house are filthy with excreta, and owing to the grade of ground, said excreta flows into said stream during rain storms, causing water in said stream to be contaminated. The waste pipe of sink in house discharges into a cesspool in yard, which is located 30 feet from a marsh abutting Springfield stream. Said cesspool is defective and the leakage through said defects contaminates the water in said stream by ground saturation.

Recommend that the walls and bottom of the cesspool thereat be made water tight, and that the said cesspool be emptied only by a licensed scavenger; that all chickens be removed from the chicken yard and chicken house, and the said yard and chicken house be thoroughly cleaned and that the maintenance of a chicken yard or chicken house within 50 feet of the high water mark of any spring, stream or water course be discontinued.

Note—The stable was found clean at time of inspection, and no horse was found therein.

S. McCALLUM, M. D.,
DANIEL T. KENNEY,
Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk.

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, fourth house north of Merrick road.

25 Bernard Hendrickson, owner: Found stable 33 feet; manure pile 30 and 33 feet; hen house 20 feet from open ditch to main stream with water in it whenever it rains. Violation of rule No. 18.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, fourth house north of Merrick road, Springfield, and found the facts as follows: Said premises consists of a dwelling, stable, etc., of which Bernard Hendrickson of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A stable, a manure heap and a chicken house are located within 33 feet of a ditch draining into the Springfield stream, the water of which is used for the Brooklyn water supply. The sink in the kitchen (not trapped) discharges through its waste pipe on the ground, and the filthy liquids therefrom flow by natural drainage into said stream. The water of the stream is contaminated by washing from the stable, chicken house, manure heap and waste water during rain storms.

Recommend that all horses be removed from the stable and all chickens from the chicken house; that the stable and chicken house be thoroughly cleaned; that the maintenance of a stable or chicken house within 50 feet of the high water mark of any spring, stream or water course be discontinued; that the sink in the kitchen be properly trapped and the waste pipe therefrom made to discharge into a properly constructed cesspool with water-tight sides and bottom located not nearer than 50 feet from the high water mark of any spring, stream or water course, and that the cesspool be emptied only by a licensed scavenger.

S. McCALLUM, M. D.,

DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises, Springfield road, west side, fifth house north of Merrick road.

26 W. D. Hendrickson, owner: Found stable with two horses 40 feet from stream; manure piles 67 feet from stream and drains directly into same by furrows. Hog pen with two pigs 26 feet from ditch to main stream; privy panned, but refuses to allow stream inspector Gardner to clean the same or to enter his land for the purpose of cleaning the banks of the stream. Violation of rules Nos. 2, 7 and 18.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, west side, fifth house north of Merrick road, and found the facts as follows: Said premises consist of a dwelling and stable, of which W. D. Hendrickson of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

1 Pigsty (two pigs), stable (two horses), manure pile 1 foot 25 feet by 30 feet from marsh which drains into Springfield stream, which is a portion of the Brooklyn water supply, said marsh is frequently submerged and drains into stream by furrows and ditch 75 feet distant, contaminating water in said stream.

2 The kitchen sink in the house is not trapped, and the waste water of said sink discharges into a ditch at rear of house which flows by natural drainage into marsh and then to stream, thus contaminating water in said stream.

Recommend that all pigs be removed from the pigsty, all horses from the stable and all manure from the premises; that the pigsty, stable and surrounding grounds be thoroughly cleaned and that the maintenance of a stable or the storage of manure within 50 feet of the high water mark of any spring, stream or water course be discontinued, and that no manure be stored upon premises unless same is kept in water tight receptacles. That the kitchen sink in house be properly trapped and that the waste water of said sink be made to discharge through an iron pipe with lead calked joints into a properly constructed cesspool of suitable size with water tight sides and bottom, located not less than 50 feet from the high water mark of any spring, stream or water course; said cesspool to be cleaned only by a licensed scavenger.

DANIEL T. KENNEY,
S. McCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,
Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises Springfield road, third house north of Merrick road.

27 John Dennis, owner: Found stable with one horse 30 feet, hen-house 15 feet and pig-pen with large accumulation of manure and in bad condition 30 feet from open ditch leading into main stream, 135 feet distant. Violation of rule No. 18.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated Springfield road, third house north of Merrick road, Springfield, and found the facts as follows: Said premises consist of a dwelling, stable, etc., of which John Dennis of premises is owner, and in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

A chicken house and yard (12 chickens) are maintained 10 feet from a marsh which drains into Springfield stream, the water of which is used for the Brooklyn water supply. A stable (one horse), a filthy pigsty (two pigs) and a manure heap are all located within 35 feet of a ditch draining into said marsh. The chicken house, stable and pigsty as well as a heap of manure are a source of contamination of the water in said stream by natural drainage during rain storms.

Recommended that all pigs and all manure be removed from the premises; that all horses be removed from the stable and all chickens from the chicken house and yard; that the pigsty, stable, chicken house and yard and the grounds thereat be thoroughly cleaned; that the maintenance of any stable, chicken house, chicken yard or collection of manure within 50 feet of the high water mark of any spring, stream or water course be discontinued, and that no manure be stored on the premises unless it be kept in water-tight receptacles.

S. McCALLUM, M. D.,
DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises vacant lot, Springfield road, near Merrick, Springfield.

28 Christopher E. Abrams, owner:

Found this a vacant lot, with refuse and garbage thrown on to it, apparently by his neighbors adjoining. Violation of rule No. 15.

To the Board of Health:

We, Daniel T. Kenney and S. McCallum, M. D., holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated vacant lot on Springfield road, near Merrick road, adjoining Hendrickson's property, and found the facts as follows: Said premises consist of a vacant lot on Merrick road, first house west of Springfield, of which Christopher E. Abrams is owner, and, in violation of section 60 of the sanitary code, were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

Large quantities of garbage and refuse on stream on south-westerly portion of lot near marsh, which drains into the Springfield stream, the water in which is used as a portion of the Brooklyn water supply, thereby contaminating water in said stream.

Recommend that the vacant lot be thoroughly cleaned, all garbage and refuse be removed therefrom; that the practice of throwing garbage and refuse on said lot be discontinued.

DANIEL T. KENNEY,

S. MCCALLUM, M. D.,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

HEALTH DEPARTMENT CITY OF NEW YORK

Complaint and report of inspection in reference to premises Springfield road, fourth house north from railroad station.

29 John W. Decker, owner.—Stephen Decker, tenant:

Found large accumulation of garbage on ground 20 feet from water in marsh and 35 feet from deep arm of stagnant water connected directly with main stream. Violation of rule No. 15.

To the Board of Health:

We, S. McCallum, M. D., and Daniel T. Kenney, holding the positions of sanitary inspectors in the health department of the city of New York, do report: That on the 31st day of October, 1898, we personally examined and carefully inspected the premises situated on Springfield road, fourth house north of railroad station, Springfield, and found the facts as follows: Said premises consist of a dwelling on Springfield road near railroad station, of which John Decker is owner, and in violation of section 60 of the sanitary code were found in a condition dangerous to life and detrimental to health, for the following reasons, viz.:

The waste water from the house is thrown on the ground 20 feet from a marsh, which drains into Springfield stream, contaminating the water in said stream, which is used for the Brooklyn water supply. A large quantity of garbage is on the ground about 20 feet from the said marsh, and during rain storms offensive matter is washed into the stream.

Recommend that a properly trapped sink be constructed in the house, provided with a proper iron waste pipe with lead calked joints; that all waste water from the premises be made to discharge through said sink waste pipe into a properly constructed cesspool, with water-tight sides and bottom, located not nearer than 50 feet from the high-water mark of any spring, stream or water-course; that the cesspool be emptied only by a licensed scavenger, and that the grounds thereat be thoroughly cleaned and all garbage and other offensive matter removed.

Note.—The premises are occupied by Stephen Decker.

S. McCALLUM, M. D.,
DANIEL T. KENNEY,

Sanitary inspectors

A true copy.

GEORGE R. CROWLY,

Assistant chief clerk

**Violations of rules for sanitary protection of public water supply of
village of Peekskill.**

PEEKSKILL, N. Y., *August 5, 1898*

B. T. SMELZER, *Secretary State Board of Health:*

Dear Sir—At a regular meeting of this board, held July 14th, a resolution was passed to notify Eugene B. Trave and J. W. Hegel to remove nuisance along the line of stream supplying the village water, which notice was duly served.

As no action has been taken by the parties to abate said nuisance, the board has instructed me to communicate with your Board, asking that action be taken in regard to same. The post-office address of said parties is Peekskill, N. Y.

Yours very truly,

W. H. CLINTON,

Superintendent

ALBANY, *August 8, 1898*

W. H. CLINTON, *Superintendent Peekskill water works, Peekskill, N. Y.:*

Dear Sir—Your communication of the 5th inst., stating that the board of water commissioners of Peekskill, N. Y., had notified Eugene B. Travis and J. W. Hegel to remove certain nuisances along the line of stream supplying the village water, and the nuisances not having been removed, asking this Board to take action on same, has been received.

In reply, it is requested that you state whether notices have been served on the parties as required by section 71 of the Public health law, which is as follows:

“Section 71. Inspection of water supply—The officer or board having by law the management and control of the potable water supply of any municipality, or the corporation furnishing such supply, may make such inspection of the sources of such water supply, as such officer, board or corporation deems it advisable, and to ascertain whether the rules or regulations of the State

Board are complied with. If any such inspection discloses a violation of any such rule or regulation such officer, board or corporation shall cause a copy of the rule or regulation violated to be served upon the person violating the same, with a notice of such violation."

If copies of the rules violated have been served on the parties mentioned, and you will so notify this office, the matter will be brought to the attention of the Board at its next meeting.

Yours respectfully,

T. A. STUART,

Assistant secretary

P. S.—Also state in your reply which of the rules of this Board made for the protection of the water supply of Peekskill, are being violated.

SCHENECTADY, November 3, 1898

Hon. C. W. ADAMS, *Chairman Drainage committee State Board of Health, Albany, N. Y.:*

Dear Sir—Agreeable to instructions from Dr. Baxter T. Smelzer, Secretary State Board of Health, dated October 24th, I beg to report that I examined the cases of the two alleged violations of the rules for the protection of the water supply of the village of Peekskill, N. Y., on the 4th inst., and submit the following report on my examination:

The public water supply system of the village of Peekskill, which was constructed and is now owned by the village corporation, comprises a gravity distribution system from a reservoir supplied by pumping from a collecting pond or reservoir formed by throwing a dam across Van Cortlandt creek, lying just east of the village. The drainage area tributary to the collecting reservoir covers about five square miles, and is hilly and rather precipitous territory, cultivated in the bottoms and lower portions of the valleys, and has quite a population living within its watershed. In August, 1897, the State Board of Health passed a set of rules and regulations for the protection of this watershed.

Rules Nos. 18 and 19, the ones claimed to be violated, are as follows:

“18. No stable, pigsty, hen-house, barn-yard, hog-yard, hitching place or standing place for horses or cattle or other place where animal manure accumulates, shall be constructed, located, or maintained within one hundred feet of the high-water mark in any lake, pond or reservoir, or within fifty feet of the high-water mark or precipitous bank of any spring, stream or water course tributary to said lakes, ponds or reservoirs.

“19. No stable, pig-sty, hen-house, barn-yard, hog-yard, hitching or standing place for horses or cattle or other place where animal manure accumulates, shall be arranged or maintained in such manner that the washings or drainage therefrom may flow through open or covered drains or channels into any pond, lake, or reservoir, or into any spring, stream or watercourse tributary thereto, without having undergone proper purification.”

The entire set of rules and regulations is published in the annual report of the board of water commissioners of the village of Peekskill for the years 1877 and 1897 inclusive, issued February 4, 1898, and this is the report referred to in the correspondence by the superintendent of the water works.

My examination of the premises of the two parties charged with violation by the authorities of the water department showed the following:

At the premises of Eugene B. Travis I found a barn or stable situated within 25 feet of the high-water mark of a stream flowing into the collecting reservoir of the village water supply, but I found that the stable had no horses or cattle there at that time, nor gave any appearance of having had any such for weeks past. No manure was found outside, nor any conditions to be complained of. I also found a hen-house 68 feet from the high-water mark of the same stream. There were no signs of drainage from the interior of the hen-house to the stream though the drainage of the ground all around the house goes to the stream. As the distance from the hen-house to the stream is more than the limit of 50 feet called for, and as there is no signs of drainage from the interior to the stream, and no hen-yard, I do not consider this a violation.

At the premises of J. W. Hegel I found that the back-water from the collecting reservoir backs up to a point opposite the stable and hog-pens referred to later, constituting this a reservoir in the meaning of the rules Nos. 18 and 19. I found the following items:

One pile manure, extending from 24 feet to 34 feet from high-water mark.

One pile decaying vegetables, from 29 feet to 40 feet from high-water mark.

Three hog-pens, with four hogs, from 48 feet to 75 feet from high-water mark.

One cow-stable, with one cow, from 50 feet to 75 feet from high-water mark.

One horse-stable, now in use, 55 feet from high-water mark.

The distance from each of these to the precipitous bank of the reservoir would be five feet less in each case. The ground between the above places and the precipitous bank of the reservoir is nearly level, but is slightly higher at the precipitous bank as this is on the alluvial flood-plain of the stream, so that the surface drainage does not flow directly to the reservoir, but flows along a ditch or furrow prepared for it directly in front of the pens and stables, and enters the reservoir a little further down without proper purification.

While a removal of these pig-pens and stables would be the best and most thorough means of rectification, still it is entirely feasible to accomplish a very considerable improvement in the conditions here found to exist without such removal, and I have no hesitation in saying that with such thorough improvement and a strict maintenance of it, the regulations could be considered as substantially complied with, though not so literally, as the distances are within the minimum ones permitted by the regulations. I was informed by the superintendent of the water commissioners, Mr. Wm. H. Clinton, that no proposition had been made to the owner of these premises to remove the pig-pens, stables, etc., at the village expense. While the conditions found here to exist are very bad and should be abated thoroughly and without delay, still I am not of the opinion that they either "occasion or require

the removal of any building or buildings," and therefore do not exempt the owner from the charge of having "violated or refused to obey" the rules and regulations specified, as contemplated in section 72 of the Public health law under which the rules were enacted. On this point, however, hangs the question as to the existence of a violation or not, a point which I have no authority to decide, and have, therefore, stated the facts and submitted my impression as to proper interpretation in this case, leaving to you the determination of the question as to the existence of a violation. If under the drainage conditions as I have stated them the buildings require removal, then there is as yet no violation by the owner, since the village has neither removed said buildings nor has made a tender to do so. If, however, the conditions do not "require or occasion" the removal of any buildings, then the owner is now chargeable with not only having violated the rules but of having refused to abate the conditions complained of after having received notice of such violation as called for by section 71 of the Public health law.

The location of the two premises where the violations are charged is within the boundaries of the town of Cortlandt, Westchester county.

The personnel of the board of health of the town of Cortlandt is as follows: James H. Haight, president; S. Allen Mead, secretary; John Halsted, L. H. Blakeley, James C. Lynch, George W. Baker and George E. Briggs, with Dr. P. H. Mason, health officer.

I am, dear sir,

Very truly yours,

OLIN H. LANDRETH,

Consulting engineer

ALBANY, N. Y., December 22, 1898

JAMES H. HAIGHT, *President board of health, town of Cortlandt, Peekskill, N. Y.:*

Dear Sir—Upon an investigation made by this Board, as required by section 71 of chapter 661 of the Laws of 1893, and in

compliance with a complaint made by the board of water commissioners of the village of Peekskill, N. Y., it is found that one J. W. Hegel, of the town of Cortlandt, is violating rules 18 and 19, made by this Board for the sanitary protection of the public water supply of the village of Peekskill, the rules being as follows:

“No. 18. No stable, pig-sty, hen-house, barn-yard, hog-yard, hitching place or standing place for horses or cattle or other place where animal manure accumulates, shall be constructed, located, or maintained within 100 feet of the high water mark in any lake, pond or reservoir, or within 50 feet of the high water mark or precipitous bank of any spring, stream or water course tributary to said lakes, ponds or reservoirs.”

“No. 19. No stable, pig-sty, hen-house, barn-yard, hog-yard, hitching place or standing place for horses or cattle or other place where animal manure accumulates, shall be arranged or maintained in such manner that the washings or drainage therefrom may flow through open or covered drains or channels into any pond, lake, or reservoir, or into any spring, stream or water-course tributary thereto, without having undergone proper purification.”

The violations of the above rules by Mr. Hegel are indicated in the report made by one of the consulting engineers of this Board, which is as follows:

“ * * * At the premises of J. W. Hegel I found that the back water from the collecting reservoirs backs up to a point opposite the stable and hog-pen referred to later, constituting this a reservoir in the meaning of the rules Nos. 18 and 19. I found the following items:

One pile manure extending from 24 feet to 23 feet from high water mark.

One pile decaying vegetables from 29 feet to 40 feet from high water mark.

Two hog-pens with four hogs from 48 feet to 75 feet from high water mark.

One cow stable with one cow from 50 feet to 75 feet from high water mark.

One horse stable, now in use, from 55 feet to ——— from high water mark.

The distance from each of those to the precipitous bank of the reservoir would be five feet less in each case. The ground between the above places and the precipitous bank of the reservoir is nearly level, but is slightly higher at the precipitous bank, as this is on the alluvial flood-plain of the stream, so that the surface drainage does not flow directly to the reservoir, but flows along a ditch or furrow prepared for it directly in front of the pens and stables, and enters the reservoir a little further down without proper purification."

In view of the above report, and under the authority vested in me by section 71 of chapter 661 of the Laws of 1896, you are hereby directed to convene the board of health of the town of Cortlandt for the purpose of enforcing obedience on the part of J. W. Hegel to rules 18 and 19, made by this Board for the sanitary protection of the public water supply of the village of Peekskill, N. Y.

Please acknowledge the receipt of this communication, after which notify me of the action taken by your board in connection with same.

Very respectfully,

BAXTER T. SMELZER,

Secretary

PEEKSKILL, N. Y., December 31, 1898

BAXTER T. SMELZER, M. D., *Secretary State Board of Health,*
Albany, N. Y.:

Dear Sir—I would respectfully report that pursuant to your notice of 22d inst., the board of health of the town of Cortlandt convened December 29, 1898, for the purpose of taking action on the violation of rules 18 and 19, made by your Board for the sanitary protection of the public water supply of the village of Peekskill, N. Y., by one Mr. J. W. Hegel, of the town of Cortlandt.

I enclose a copy of the resolution adopted by this board, in relation to the abatement of such nuisances, and, also, a copy of the notice which I personally served upon said Mr. Hegel on Friday morning, December 30, 1898.

Very respectfully,

S. ALLEN MEAD,

Secretary

**COPY OF PREAMBLE AND RESOLUTIONS, PASSED AT
A MEETING OF THE BOARD OF HEALTH OF THE
TOWN OF CORTLANDT, N. Y., HELD DECEMBER 29,
1898:**

“Whereas, The State Board of Health, in compliance with a complaint made by the board of water commissioners of the village of Peekskill, N. Y., has notified this board that one, J. W. Hegel, of the town of Cortlandt, is violating rules 18 and 19, made by the said State Board of Health for the sanitary protection of the public water supply of the village of Peekskill, N. Y., and having directed this board, according to the Public health law, section 71, chapter 661, Laws of 1893, to convene for the purpose of enforcing obedience on the part of said J. W. Hegel to said rules 18 and 19; be it

“Resolved, That the said J. W. Hegel be forthwith notified to abate the nuisances described in the report of the consulting engineer of the State Board of Health as violating rules 18 and 19 adopted by the State Board of Health for the sanitary protection of the water supply of the village of Peekskill, N. Y., and, that the same must be abated within five days from the service of such notice or suffer the penalty as prescribed by the Public health law of the State of New York.”

A true copy.

S. ALLEN MEAD,

Secretary

COPY OF NOTICE SERVED UPON J. W. HEGEL, AT 10
O'CLOCK, A. M., FRIDAY, DECEMBER 30, 1898

" To Mr. J. W. HEGEL:

" You are hereby required, within *five* days from the receipt of this notice, to abate the nuisances as are hereinafter set forth, on your premises near the pumping station of the Peekskill water works, or suffer the penalty as prescribed by the Public health laws of the State of New York.

" The following extracts from an order of the State Board of Health will fully set forth the nuisances which are to be abated by you, to wit:

" Upon an investigation made by this Board (State Board), as required by section 71 of chapter 661 of the Laws of 1893, and in compliance with a complaint made by the board of water commissioners of the village of Peekskill, N. Y., it is found that one J. W. Hegel of the town of Cortlandt, is violating rules 18 and 19, made by this Board for the sanitary protection of the public water supply of the village of Peekskill.

" The violations of the above rules by Mr. Hegel are indicated in the report made by one of the consulting engineers of this (State Board) Board, which is as follows:

" At the premises of J. W. Hegel I found that the back water from the collecting reservoir backs up to a point opposite the stable and hog-pens referred to later, constituting this a reservoir in the meaning of the rules Nos. 18 and 19. I found the following items:

One pile manure extending from 24 feet to 34 feet from high-water mark.

One pile decaying vegetables, from 29 feet to 40 feet from high-water mark.

Three hog-pens, with four hogs, from 48 feet to 75 feet from high water mark.

One cow stable, with one cow, from 50 feet to 75 feet from high water mark.

One horse stable, now in use, from 55 feet to from high-water mark.

“The distance from each of these to the precipitous bank of the reservoir would be five feet less in each case. The ground between the above places and the precipitous bank of the reservoir is nearly level, but is slightly higher at the precipitous bank, as this is on the alluvial flood-plain of the stream, so that the surface drainage does not flow directly to the reservoir, but flows along a ditch or furrow prepared for it directly in front of the pens and stables, and enters the reservoir a little further down without proper purification.”

“This notice is served upon you by order of the board of health of the town of Cortlandt.

“Dated December 29, 1898.

S. ALLEN MEAD,
“*Secretary*”

A true copy.

S. ALLEN MEAD,
Secretary

NIAGARA FALLS

Water supply

NIAGARA FALLS, N. Y., *January 20, 1898*

BAXTER T. SMELZER, M. D., *Secretary State Board of Health,
Albany, N. Y.:*

Dear Sir—I desire to call your attention to the condition of the water supply of the city of Niagara Falls. As no doubt you know, we are situated midway between Lake Erie and Lake Ontario on the Niagara river, from which river the city water supply is taken. The city of Buffalo with 350,000 inhabitants,

Tonawanda with 20,000 inhabitants, Grand Island and the scattering population along the river will bring the total population up to 400,000, which daily dumps a vast quantity of sewage into the river. This floats along the river to our city, where it is pumped directly into the pipes and furnished to our citizens for culinary purposes. During the past three years, 1895, 1896 and 1897, there have been reported to this department, 482 cases of typhoid fever, and I have reason to believe that one-third more cases existed than were reported. During the same period, 1895, 1896 and 1897, there have been 45 deaths from the same disease.

This large number of cases of typhoid fever and the conditions already described, leave but one inference, that is, that our source of water supply is infected. During the past three or four weeks the water has been exceedingly bad in appearance, often being so roily that in an ordinary glass filled from the faucet of the service pipes, the bottom could not be seen. There is an earnest desire on the part of the local board of health and the citizens in general that something should be done to improve this condition.

I shall await with interest your reply, hoping that correspondence between us may bear good results.

Very respectfully, your obedient servant,

WALTER A. SCOTT,

Health officer city of Niagara Falls

ALBANY, N. Y., January 21, 1898

WALTER A. SCOTT, M. D., *Health officer, Niagara Falls, N. Y.:*

Dear Sir—I am in receipt of your communication of the 20th inst. referring to the possible infection of the water supply of your city, caused as alleged by you, by sewage from the city of Buffalo, Tonawanda, etc., being emptied into the Niagara river, which is the source of your water supply.

In reply you are informed that a meeting of this Board will be held in a short time, and the attention of the members will be called to the conditions referred to by you, with the recommenda-

tion, that an investigation be made with the view to formulating such rules as are deemed necessary to protect the water supply of your city from contamination.

Very respectfully,

BAXTER T. SMELZER,

Secretary

NIAGARA FALLS, N. Y., *January 27, 1898*

BAXTER T. SMELZER, M. D., *Secretary State Board of Health:*

Dear Sir—Your favor of January 25th at hand.

I enclose a petition addressed to your honorable body from the physicians of this city.

There have been reported, to date, this month 25 cases of typhoid.

I also ask you to take into consideration what the result will be if the great Pan-American exposition is held as projected in 1899 on Cayuga island and the sewage from the same be allowed to pollute the Niagara within four miles of our water supply.

Any facts or data, which the State Board may desire, will be gladly furnished by this department, and should you deem it advisable for a representative of this city to meet your body, we shall be only too glad to send such a representative at any time or place which you designate.

Very respectfully yours,

WALTER A. SCOTT,

Health officer city Niagara Falls

P. S.—Enclosed petition contains the names of all the physicians doing business in this city.

NIAGARA FALLS, N. Y., *January 27, 1898*

To the State Board of Health, State of New York:

Gentlemen—We, the undersigned, physicians and surgeons of the city of Niagara Falls, believing that the Niagara river (the source of this city's water supply) is infected from the pollution of said river by the depositing therein of the sewage of 400,000 people living at Buffalo, Tonawanda, and intermediate points,

do most earnestly petition your honorable body to take such steps as will prevent this and make such other rules and regulations as may be deemed necessary to secure to us pure and wholesome water.

C. G. Leonwolf.

J. Gray.

G. H. Piddle.

E. O. Bingham.

Wm. P. Russell.

G. P. Macartney.

O. E. McCarty.

James H. Meehan.

W. C. Cross.

J. H. Sutherland, M. D.

J. H. Miller, M. D.

Wm. H. Hodge.

W. R. Campbell.

Fred. R. McBrien.

Thomas J. McBlain, M. D.

Frank Hall.

G. Welch, M. D.

F. Guillemont, M. D.

J. G. Van Pelt, M. D.

W. D. Hough.

H. W. Bright.

J. A. Lanigan.

ALBANY, N. Y., *February* 10, 1898

WALTER A. SCOTT, *Health officer, Niagara Falls, N. Y.:*

Dear Sir—Your communications relative to the alleged pollution of the water supply of the city of Niagara Falls were submitted to this Board at a meeting held January 28, 1898, and I am directed to call your attention to sections 70, 71 and 72 of the Public health law, a copy of which is sent to you under a separate cover.

It is suggested that your board call the attention of the board of water commissioners of your city to the necessity of their having formulated for approval by this Board, such rules as are deemed necessary to protect the water supply of the city of Niagara Falls from contamination.

If desired, notice will be sent to you of the time and place of the next meeting of this Board, in order that rules may be submitted for approval or that representatives of your city may be heard in connection with the present alleged pollution of its water supply.

Very respectfully,

BAXTER T. SMELZER,

Secretary

NIAGARA FALLS, N. Y., *April 16, 1898*

BAXTER T. SMELZER, M. D., *Secretary State Board of Health,
Albany, N. Y.:*

Dear Sir—I have been directed by both the board of health and the board of water commissioners to request that you send to this city a consulting engineer of your Board, to make a thorough examination of this city's water supply, as per correspondence which has already passed between us.

I am a member of the National Guard of the State of New York, and liable to be called out at any time during the present Spanish-American controversy. Therefore I would esteem it a favor if I might be notified 48 hours in advance of the arrival of the said engineer, as in the event of my being called away, different arrangements might have to be made relative to his visit.

Very respectfully yours,

WALTER A. SCOTT,

Health officer

ALBANY, N. Y., *April 21, 1898*

WALTER A. SCOTT, *Health officer, Niagara Falls, N. Y.:*

Dear Sir—Your communication of the 16th inst. stating that by order of the board of health and the board of water commissioners of your city, you have been directed to request that one of the sanitary engineers of this Board be sent to Niagara Falls for the purpose of making an examination of the water supply of your city at the expense of the municipality, has been received.

In reply you are informed that Hon. John Bogart has been detailed to make the desired examination, and will visit your city for that purpose some time during the coming week.

Very respectfully,

BAXTER T. SMELZER.

Secretary

ALBANY, *May 5, 1898*

JOHN BOGART, *Consulting engineer, State Board of Health, 50
Wall street, New York city, N. Y.:*

Dear Sir—In compliance with instructions received from state engineer C. W. Adams, Dr. Walter A. Scott, health officer of the city of Niagara Falls, was notified on April 21, 1898, that you

would visit that city some time during the following week for the purpose of making an examination of the water supply of that city. As Dr. Scott informs us that you have not yet made your proposed visit, will you kindly communicate with him as to the time you will reach Niagara Falls?

Very respectfully,

T. A. STUART,

Assistant secretary.

NEW YORK, *December 16, 1898*

DR. BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—The health officer of Niagara Falls, Dr. Walter A. Scott, has informed me that he has had some correspondence with you during the time that I have been considering the sanitary conditions there. In order that you may be fully advised as to my conclusions. I send you herewith a copy of a report which I recently transmitted to the local board of health.

I may say that there is no doubt that the amount of typhoid in that city has been so great as to demand some action. The condition of the water in the wells was very bad. The number of wells in use was very much larger than was generally supposed, until the investigations which I inaugurated disclosed the facts.

The drinking water of the city is supplied from the Niagara river, but from two pumps, at one of which the water is filtered and the other unfiltered. There can be no doubt that the filtration of this Niagara river water is very desirable. It carries a large volume of sewage from Buffalo and places between Buffalo and the falls.

Very truly yours,

JOHN BOGART,

Consulting engineer

NEW YORK, November 29, 1898

To the Board of Health of the city of Niagara Falls, N. Y.:

Gentlemen—I have the honor to report that in accordance with your request, communicated through the health officer of the city, I have made several visits to Niagara Falls for the purpose of an inquiry into its sanitary conditions. I understand that you requested me to make this examination in accordance with a suggestion of the State Board of Health.

The reason leading to this examination, on your part, was as stated to me by the health officer, the fact that typhoid fever has existed in the city for several years past, and that at times the number of cases was so great as to approach an epidemic condition. The number of cases reported in January, 1898, was 38; in February, 33; in March, 28; in April, 37; an average of more than one case per day. This record is taken from the reports of the physicians of the city made to the board of health. This amount of typhoid fever is alarming. The conditions which cause it should be ascertained if possible, and remedied as far as practicable.

Certain characteristics of typhoid and the conditions which lead to it are summarized in the following extracts from "The Principles and Practice of Medicine," By William Osler, M. D., of Johns Hopkins University. New York. D. Appleton & Co., 1892:

"Typhoid fever is an infectious disease and prevails especially in temperate climates and mostly in autumn months; it has been called the 'autumnal fever.' It is a disease of youth and early adult life. As in other fevers, not all exposed to the infection take the disease and there are grades of susceptibility; some families seem more disposed to infection than others. The researches of Eberth, Koch, Gaffky and others have shown that there is a special micro-organism constantly associated with typhoid fever. It is a rather short, thick, mobile bacillus with rounded ends, in one of which, sometimes in both (particularly in cultures), there can be seen a glistening, round body, believed to be a spore; but these polar structures are probably only artefacts."

of dense protoplasm. It grows readily in various nutritive media, and on potato in a characteristic manner, as the growth is invisible. This feature is not peculiar, however, to the typhoid bacillus. It is difficult to differentiate from the bacterium coli commune, except by certain chemical tests.

"In recent cases of typhoid fever the bacillus is found in the lymphoid tissues of the intestines, in the mesenteric glands, in the spleen and in the liver. It occurs also in irregular clumps in the contents of the intestines and in the stools. The bacillus is said to have been found rarely in the blood, in the rose-colored spots, and in the urine.

"Outside the body the bacilli retain their vitality for weeks in water. Whether an increase can occur is not yet finally settled. Bolton denies it, but the general opinion seems to be that such increase may take place to some extent. They appear from ordinary water, in competition with saprophytes, in a few days. In milk they undergo rapid development, without changing the appearance of the milk. They may increase in the soil and retain their vitality for months. They are not killed by freezing, but, as Prudden has shown, may live in ice for months. In many epidemics the bacilli have been detected in the infected water. The detection, however, of the typhoid bacillus in drinking water is by no means easy, and the question in individual cases must be settled by experts who have had special experience with this germ. Both Prudden and Ernst have found it in water filters.

"Modes of conveyance. (a) Contagion. Typhoid fever is certainly not a very contagious disease, but the possibility of direct transmission must be acknowledged. The poison is not given off from the skin or in the breath, but in the faeces. Practically only those persons are liable to contract the disease in this way, who have to do with the stools or with the body linen of patients. I have known of several instances in which nurses appear to have been infected under these conditions.

"(b) Infection of water, is unquestionably the most common mode of conveyance. Many epidemics have been shown to originate in the contamination of a well or spring. A very striking one occurred at Plymouth, Pa., in 1885, which was investigated

by Shakespeare. The town with a population of 8000 was in part supplied with drinking water from a reservoir fed by a mountain stream. During January, February and March, in a cottage by the side of and at a distance of from 60 to 80 feet from this stream, a man was ill with typhoid fever. The attendants were in the habit at night of throwing out the evacuations on the ground toward the stream. During these months the ground was frozen and covered with snow. In the latter part of March and early April, there was considerable rainfall and a thaw, in which a large part of the three months' accumulations was washed into the brook, not 60 feet distant. At the very time of this thaw the patient had numerous and copious discharges. About the 10th of April typhoid fever broke out in the town, appearing for a time at the rate of 50 a day. In all about 1200 people were affected. An immense majority of all the cases was in the part of the town which received water from the infected reservoir.

"Milk may also be the source of infection. One of the most thoroughly studied epidemics due to this cause was that investigated by Ballard in Islington. The milk may be contaminated by infected water used in cleansing the cans. In fresh milk it has been shown that the germs grow rapidly.

"Filth, bad sewers, or cesspools cannot in themselves cause typhoid fever, but they furnish the conditions suitable for the preservation of the bacillus and possibly for its propagation.

"Contamination of the soil.—Pettenkofer holds that the poison is not eliminated in a condition capable of communicating the disease directly, but that it must first undergo changes in the soil, which changes are favored by the ground water.

"It does not seem probable that typhoid fever is communicated by the air alone, as by the medium of sewer gas."

In the report of the State Board of Health of Massachusetts for 1892, the results are given of a very exhaustive investigation of epidemics of typhoid at several places. One at Lowell, extending to more than 550 cases, was found to have been caused entirely by four cases of typhoid, from which cases a brook was contaminated, which flowed into the water supply of the city.

Another epidemic at Lawrence gave the following conclusions: "That during November and December, under certain conditions some of the infectious material of typhoid fever may be conveyed nine miles by a river, may slowly travel through a distributing reservoir, and still remain effective to a very dangerous extent if swallowed in drinking water."

An investigation made at Cooperstown in 1894, showed that the existence of typhoid fever there was caused by the infection of the water supply. When that was remedied, the disease disappeared.

The fact that the fever is more frequently communicated by the medium of drinking water than in any other way is well established.

My first suggestion to your health officer was therefore in the direction of securing information as to the water used for drinking in the city. It appears that there are three different sources.

A. Wells.

B. Niagara river water, pumped directly from the hydraulic canal, which water flows from the river in the canal through the city.

C. Niagara river water filters through Morison-Jewell filters.

A. Wells. The use of wells in a city of increasing population always presents elements of danger of contamination of the water in the wells. This danger becomes greater with the more extended and general use of water supplied by pipes. The introduction of sewers does not prevent pollution of wells. There are, however, in your city a large number of houses not connected with the sewers. There are in use a large number of privies. I have been informed that some wells had to be made deeper when sewers were constructed in their vicinity, as the sewers drew the water away from the wells. This suggests also that the deeper wells may be contaminated by water from the sewers.

It is an established fact that water from wells which is not pure may be used by many persons without apparent harm, and that the same wells, contaminated by discharges from typhoid patients, may cause many cases of typhoid. It is not consistent with modern sanitary science to permit the use of wells which

are or may be the recipients of a flow from sewers or from privies. It is the duty of the health authorities to take measures to prevent such use.

Examinations of water for the purpose of determining its bacterial condition have been in recent years a great aid to sanitary authorities. I therefore recommended the employment of some person of expert knowledge in this method of examination. Mr. James P. Caird was recommended as having special experience in the bacteriological division of the department of analytical chemistry of the Rensselaer Polytechnic Institute, and as having made such examinations at other points. While not personally acquainted with Mr. Caird, I know that Professor W. P. Mason, the head of that department, is an able expert and I can have no doubt that the examinations made by his associate, Mr. Caird, will give the existing facts.

Where such examinations show that the water of a well has fecal matter in it, the use of such wells should be discontinued as a menace to public health. I recommend such discontinuance in such cases.

B. and C. The supply pumped into the mains of the city is all taken from the Niagara river. This water, unfiltered, has two objectionable features: First, the possibility of contamination from the sewage of Buffalo, Tonawanda and other places on the river above Niagara; second, the large amount of solids brought down at some periods, particularly in floods.

With regard to the first possibility it may be observed that while the dilution of the sewage from these places will be large, yet there is always danger to health in drinking sewage polluted water, and the quotations made in the earlier parts of this report show that typhoid may be communicated in highly diluted water and at great distances from the point of original contamination. The examinations of the water of the river, before and after filtration show a very great decrease in the bacterial organisms after filtration, amounting to from 91 to 98 per cent. I have had a chemical analysis of the water made by Professor Mason, the results of which are sent herewith, together with a

letter from him. He says, "water No. 1 which represents water No. 2 after filtration, shows evidence of distinct improvement by reason of such filtration."

The introduction of filters for potable water has been the means of sanitary improvement in many places. At Elmira, for instance, where filtration was introduced early in 1897, the number of cases of typhoid for the 13 months preceding the use of the filters was 541. The number of cases of typhoid for the 13 months immediately after the introduction of the filters was 70.

As to the purification of the water from the sediment brought down in times of flood, filtration will show decided improvement. Some of the sediment of the Niagara is so extremely fine as to cloud the water, even after filtration, but there can be no doubt that filtration will remove the greater part of objectionable matter.

The best location for a filter plant will be where water can be taken into it near the river. The hydraulic canal passes through the city, and through your efforts much of the inflow into it of objectionable matter has been stopped, it is inevitable that much dirt will get into an open canal flowing through a populous district. The bridges across it send into it daily more than is pleasant to consider in its use for drinking,

There seems to be no source of supply of potable water other than from the Niagara river, to be obtained for your city at any reasonable outlay.

I therefore recommend that the city take such measures as may be requisite to provide that all the water for potable and household uses supplied to your citizens be properly filtered.

Respectfully,

JOHN BOGART,

Consulting engineer

SOUTH NYACK

Water supply

SOUTH NYACK, N. Y., *August 9, 1898*

BAXTER T. SMELZER, M. D., *Secretary State Board of Health:*

Sir—The village of South Nyack is being supplied with water which is now, as it has been for some years past, at this season of the year, detrimental to public health in that it is impure and foul to taste, to smell, to touch, to view.

The board of trustees, through the president of the village, Mr. S. R. Bradley, sought to have the matter remedied by the water commissioners of Nyack. That body seems powerless in the matter. I enclose you copy of letter from water commissioners herein.

Is it not within the powers of your body, to whom has been delegated by the state the preservation of the health of the people, to cause such immediate measures to be taken as will remedy the evil complained of? If so, the board of trustees of South Nyack hope that you will not hesitate to exercise that power for the benefit of their people.

Yours respectfully,

JOSEPH T. KELLY,

Clerk

OFFICE OF WATER COMMISSIONERS

VILLAGE OF NYACK.

NYACK, N. Y., *August 4, 1898*

S. R. BRADLEY, President:

Dear Sir—I am directed by the board of water commissioners of the village of Nyack to acknowledge the receipt of your communication of the 3d inst.

Your statement that complaint was made to the State Board of Health some years ago regarding the condition of the Hackensack water is correct, and that board recommended filtration as a remedy for the then existing conditions.

During the condemnation proceedings for the acquirement of the water works by the village this question was again raised and the same remedy suggested.

The water commissioners, after taking control of the existing works, began the erection of a filtration system, but were unable to complete it owing to lack of sufficient funds.

At the last annual village election they asked the appropriation of the amount required to finish the work, but the proposition was voted down by the electors. They are, therefore, entirely unable to proceed with the construction of the filter beds, the advantage and necessity of which they fully realize.

While they regret this condition of affairs, you can readily understand that it is not one which they, as a board, have any power to remedy under the village law.

Yours very truly,

EDWARD H. COLE,

Clerk water commissioners

ALBANY, August 11, 1898

JOSEPH T. KELLY, *Village clerk, South Nyack, N. Y.:*

Dear Sir --Your communication of the 9th inst., with enclosure on the subject of impure water being furnished to the village of South Nyack, has been received.

As it is very evident from your statement, as well as that of the water commissioners, that the water supplied to the village is being contaminated, it is suggested that application be made to this Board to provide rules and regulations for the protection from contamination of the water supply of the village of South Nyack. in accordance with article 5 of the Public health law, a copy of which we send to you under a separate cover.

It is suggested, if the village authorities decide to take advantage of the provisions of article 5, that they employ one of the sanitary engineers of this Board to examine the water shed of

the water supply of South Nyack and formulate such rules as are deemed to be necessary for the protection from pollution of such water supply.

Very respectfully,

T. A. STUART,

Assistant secretary

SOUTH NYACK, N. Y., August 17, 1898

BAXTER T. SMELZER, M. D., *Secretary New York State Board of Health, Albany, N. Y.:*

Dear Sir—Your communication of the 11th inst. in reply to mine of 9th inst., in re impure water furnished to the village of South Nyack has had the consideration of the board of trustees.

I am directed by the board to say that the village of South Nyack does not control the water supply of the village. The supply is furnished by the water commissioners of the village of Nyack from the Hackensack creek through the former system of the Nyack Water Works Company, more generally known as the Voorhis system, and which system was the subject of investigation by your board on or about October 9, 1894. As the result of that investigation filtration, I believe, was the remedy suggested, but the suggestion has never been acted upon.

Before acquiring the system by condemnation proceedings the water commissioners adopted elaborate plans to obtain water from the Hackensack creek a short distance from the pump station of the then Nyack Water Works Company, which plans contemplated a filter bed, which was begun, but which has not been completed for want of funds, the electors of the village of Nyack having, at the last village election, voted down an appropriation for that purpose. The electors of South Nyack had no voice in the matter.

The necessity for the purification of the water is imperative and the board of trustees of South Nyack believe it to be their duty to use every legal and lawful means to accomplish that purpose for their people.

The board of trustees therefore desires and asks the aid of one of the sanitary engineers of your Board under the provisions of article 5 of the Public health law.

Kindly inform the board of trustees when the engineer will be here so that the members may consult with and inform him as to the condition of the supply of water and obtain his views as to the best means to remedy the same.

Awaiting your reply and urging immediate action in this matter I am,

Very respectfully,

JOSEPH T. KELLY,

Clerk

ALBANY, N. Y., August 22, 1898

Joseph T. Kelly, Village clerk, South Nyack, N. Y.:

Dear Sir—We are in receipt of your communication of the 17th inst., in the matter of impure water being furnished to the village of South Nyack, with the statement that the board of trustees of your village, believing it to be their duty to secure pure water for their citizens, ask the aid of one of the consulting engineers of this Board under the provisions of article 5 of the Public health law.

In reply you are informed that if the expenses of such service will be paid by your municipality, one of the consulting engineers will be designated to visit South Nyack for the purpose of investigating and advising with the authorities on the subject to which you refer.

We make the statement as to the payment of expenses, as we do not understand from your letter that the village agrees to pay the expenses, which possibly would not exceed \$25 or \$30.

Very respectfully,

T. A. STUART,

Assistant secretary

SOUTH NYACK, N. Y., August 24, 1898

BAXTER T. SHELZER, M. D., *Secretary New York State Board of Health, Albany, N. Y.:*

Dear Sir—Replying to your favor of August 22d, the board of trustees of the village of South Nyack recognized the fact that it should pay the expenses of such sanitary engineer as would

be sent by your Board in compliance with request of August 17th, under the provisions of article 5 of the Public health law.

This board will cheerfully pay the expenses of services to be rendered by such engineer and ask that it may be notified of his coming so that it can meet with and consult him.

Very respectfully,

JOSEPH T. KELLY,

Clerk

ALBANY, N. Y., August 26, 1898

Joseph T. Kelly, Village clerk, South Nyack, N. Y.:

Dear Sir—We are in receipt of your communication of the 24th inst. In reply you are informed that the chairman of the drainage committee has designated Prof. Olin H. Landreth to visit South Nyack for the purpose of investigating as to the quality of water being furnished to your village by the water commissioners of Nyack.

Prof. Landreth will make the investigation some time during the present month, and will notify you by wire as to the time he will reach South Nyack.

Very respectfully,

T. A. STUART,

Assistant secretary

SOUTH NYACK, N. Y., February 4, 1899

BAXTER T. SMELZER, M. D., *Secretary New York State Board of Health, Albany, N. Y.:*

Dear Sir—Will you kindly furnish the board of trustees of the village of South Nyack with copy of report of Prof. O. H. Landreth and the accompanying supplemental reports on the water supply of Nyack and South Nyack?

Very respectfully,

JOSEPH T. KELLY,

Village clerk

ALBANY, N. Y., February 7, 1899

Joseph T. Kelly, Village clerk, South Nyack, N. Y.:

Dear Sir—Your communication of the 4th inst., requesting a copy of the report of Prof. Landreth upon his investigation of a complaint made to this Board concerning the quality of water being furnished to the village of South Nyack, has been received.

In reply you are informed that the report with the papers in the case, are now in the hands of the law committee of the board to whom the matter was referred at the November meeting.

In December the law committee reported progress and were granted more time to examine the matter, and it is expected that their report will be made at a meeting to be held this month.

Upon receipt of the report of the law committee and the return by them of Prof. Landreth's report, we will furnish you with copies of both at the same time notifying you of the final action of the Board.

Very respectfully,

T. A. STUART,

Assistant secretary

ENGINEERING SCHOOL OF UNION COLLEGE,

SCHENECTADY, N. Y., September 21, 1898

Hon. C. W. Adams, State engineer and Chairman drainage committee, State Board of Health, Albany, N. Y.:

Dear Sir—Agreeable to your instructions communicated verbally through assistant secretary Stuart, I beg to submit the following report of my examination of the water supply of the village of South Nyack, made on August 31st and September 1st.

This water supply was examined by Mr. Martin Schenck, then consulting engineer of your Board, on October 9 and 10, 1894, and his report of this examination appears in the annual report of the State Board of Health for 1895, pages 341 to 344, to which report I beg to refer you since it very correctly indicates the present condition of the supply, except as to certain changed conditions and changes which have occurred meanwhile, and which are incorporated in my report.

During my examination I met and conferred with Mr. Stephen Bradley, president of the village Mr. Howard Van Buren, trustee, and Mr. Joseph T. Kelley, village clerk, the latter of whom accompanied me on my examination. I also met Mr. G. N. Houston, C. E., engineer and superintendent of the board of water commissioners of the village of Nyack.

As indicated by Mr. Schenck in his report, the villages of South Nyack, Nyack, and North Nyack (or Upper Nyack) are supplied with water from a common system, originally owned by the Nyack Water Works Company, but acquired about two years ago by the village of Nyack. The distribution system of mains, service pipes and hydrants was laid in and through the village of South Nyack by the private water company, who made a contract with the village of South Nyack to furnish water for its fire hydrants and with its citizens for their private water connections and supplies. When the works of the Nyack Water Company were acquired by the village corporation of Nyack, the water service to South Nyack village and citizens was continued as before the change, and without any new contract between the two municipal corporations, so far as I could learn from the South Nyack officials, though at my request a more thorough search of the minutes of the South Nyack trustees' meetings is being made. The village of Nyack, through its board of water commissioners, collects its water rents for private service in South Nyack directly from the citizens themselves and not from the corporation of South Nyack.

The rates charged the citizens of South Nyack are the same as those charged the citizens of Nyack village, and the same water rules prevail in both cases. No condition was ever imposed by the village of South Nyack on the original private water company or its successor, the village of Nyack, as to the character or quality of the water supplied to South Nyack. The water supply, as Mr. Schenck reports, is taken from Hackensack creek, tributary of Hackensack river, which creek has its source north of the Nyack villages and flows southerly past them on the west, the pump station and intake being about two miles west of Nyack and near West Nyack station on the West Shore railroad.

The principal tributary of the creek above the intake is the outlet of Rockland lake, lying about four miles north of Nyack. The water of this lake is comparatively clear, very cold and apparently an excellent potable water. About a mile below the lake a dam has been thrown across the valley of the outlet, forming a large pond called Conger's pond; though originally intended for landscape purposes, this pond was formed without any preparation being taken to keep the water pure and sweet; the land flooded was quite level and the depth is therefore quite shallow; no stripping of the soil or removal of vegetable matter preceded the impounding of the water, and, as a result, the pond is very rich in aquatic growth; the temperature of the water is high and laden with organic matter. At the time of my visit the water in the pond was very highly colored, was somewhat turbid and exhibited a very perceptible musty odor, and showed large amounts of living and dead vegetable matter in the water. The discharge of the stream at the waste-weir of the pond was ninety cubic feet per minute. The color and odor of the water in the pond was very different from that in the Rockland lake. After flowing for a mile or so after leaving the Conger's pond the stream enters a marsh or swamp which extends to and below the pumping station, giving the water an exposure, of a mile of flow, to the very undesirable conditions which the swamp presents. This swamp is frequently overflowed in its lower levels and at every heavy rain, water laden with vegetable matter is flushed into the stream, carrying with it and depositing in the stream-bed vegetable debris, the existence of which is everywhere evident in the bed of the stream.

At the intake at the pump station, the color of the water is even darker than at the outlet of Conger's pond, but the odor is less perceptible. The turbidity is also much greater. Pending the negotiations which ultimately led to the acquirement of the water works by the village of Nyack, the village corporation commenced the construction of a new pumping station less than a half mile above the old one, where it was intended to take the water from the creek as in the old system, but to filter it through

intermittent sand filters. After the village acquired the water works the construction of the new pumping station was continued and completed and the construction of the sand filters was commenced but was not completed. At the regular village election on March 15, 1898, the question of appropriating money for the completion of the filtration works—estimated to cost \$20,000 more— was submitted to the vote of the taxpayers of the village of Nyack. Out of about 300 voters eligible to vote on appropriations, only 38 votes were cast in favor of the appropriation, and 131 votes were cast against it. As a consequence, the filter plant remains unfinished and the water supply is still being drawn from the creek at both the old and the new stations, as both are used alternately. At the old station the intake is simply a wooden box-pipe extending from a point in the main channel of the creek into a small pump well under the pump-house floor; the end of the pipe in the stream lies directly on the bottom of the stream-bed, and as a result draws in with the water whatever foreign matter happens to be floating or rolling past the end of the pipe. Both stations deliver water into the same force-main and into the same two reservoirs, one on a higher level than the other furnishing water to the highest portion of the village of Nyack and to a small portion of the village of South Nyack. The other reservoir, situated on Main street furnishes the larger portion of both villages. The high-service reservoir is of masonry with a concrete bottom, while the low-service reservoir is in earthwork, being partly in excavation and partly in embankment, with some rough stone paving. At the time of my examination the water in the high-service reservoir was very highly colored and rather turbid, while the water in the low-service or Main street reservoir was not only very highly colored but also *very* turbid.

The complaints made by the citizens of Nyack which led to the former examination, and by the citizens of South Nyack which led to the present examination, are that the water furnished them is unwholesome, disagreeable both to taste and smell, repugnant in appearance from the large amount of organic and mineral matter present in it, and frequently unsuitable for use in washing even.

Indirect complaints of its having been the cause of sickness were reported but I was unable to verify these and the health officer of the village of South Nyack, Dr. Couch, disclaimed any knowledge of such cases.

The extent to which this public water supply is used may be seen from the following statistics:

Population of Nyack, 4226, portion using public water three-fourths; population of South Nyack, 1314, portion using public water two-thirds; population of Upper Nyack, 600 (estimated), portion using public water one-sixth.

CHEMICAL AND BIOLOGICAL EXAMINATION OF SAMPLES OF NYACK WATER

After a personal examination of the stream and drainage area of the water supply, I was convinced that the case warranted an investigation of the chemical and the biological character of the water; this investigation being authorized by the South Nyack officials, I secured a sample for chemical examination from a water tap supplied from the Main street reservoir. This sample, one gallon in amount, was sent to Prof. Maurice Perkins, professor of chemistry in Union college, Schenectady, for quantitative analysis, and the result of this analysis is given below. On reaching home I also requested Prof. James H. Stoller, professor of biology in Union college, to prepare sterilized flasks for securing samples and send them to Mr. Joseph T. Kelley, village clerk of South Nyack, with explicit instructions as to the manner of taking the samples for biological analysis. Mr. Kelley gave the matter of taking the samples his personal attention and shipped them to Prof. Stoller at 6 p. m. on September 9th. These samples, three in number, were taken as follows: Sample No. 1 was taken from one foot below the surface of water in the Main street (low service) reservoir in Nyack; sample No. 2 was taken from two feet below water surface in Conger's pond, while No. 3 was taken from Rockland lake two feet below water surface near the end of dock at picnic grounds.

Two-quart samples from the same places were simultaneously taken for microscopic analysis. They were numbered the same as the small sterilized samples. The results of the biological examinations follow:

CHEMICAL ANALYSIS AND MICROSCOPIC EXAMINATION OF NYACK WATER MADE BY PROFESSOR MAURICE PERKINS OF UNION COLLEGE.

CHEMICAL DEPARTMENT, UNION COLLEGE, *September 6, 1898*

My Dear Professor LANDRETH:

The specimen of water you sent me for examination and which I understood you was from Nyack, N. Y., was:

Slightly turbid, evidently from some vegetable growth.
Yellowish green in color.

Gave a marsh-like odor on heating to 100 deg. Fahr.

In 100,000 parts it gave:

Solid residue on evaporation and heating to 120° Cent..	10.000
Left on incineration: Mineral matter.....	6.500
Loss on ignition: Organic and volatile matter.....	3.500
Chlorine	0.636
Same calculated as chloride of sodium: Common salt....	1.450
Nitrogen as free ammonia.....	0.006
Nitrogen as albuminoid ammonia.....	0.007
Nitrogen as nitrates.....	0.028
Nitrogen as nitrites; faint traces.....	.....
Phosphates; none . . . . .	.....
Sulphuretted hydrogen; none.....	.....

Microscopic examination

On examination of the sediment left by the water on standing for some time, with the microscope I found remains of and the forms of life usual to waters which have been exposed to the light and heat of the summer sun. I have found many specimens of so-called water-fleas, such as Cyclops, some larval forms of higher organisms, Diatoms and Desmids, lower forms of vegetable growth and some few specimens of *Spongilla fluviatilis*, but not

many. The sediment was swarming with life. This last form is familiar to you as the sponge that Remsen found in the Boston water in 1881 and thought that the disagreeable smell and taste came from the decomposition of this growth.

The marshy odor which is not very agreeable, is what one must expect from a water at this time of the year which has been exposed to sunlight, etc. It soon passes off and does not affect vegetables cooked in it. The mineral solids are present in small quantity, and the volatile and the organic matter are about that of the Croton at this season. The character of this is indicated by the microscopic examination. They can all be removed by filtration and will be destroyed on boiling the water. I should not recommend people in delicate health to drink this water without boiling and filtering, as it is likely to cause bowel trouble. Aside from the organic matter of the kind spoken of, the water is very good for a surface water. We judge the character by the quantities of the chlorine and different forms of nitrogen. The chlorine is a little large but this is not a sign of sewage pollution unless accompanied by large quantities of nitrogenous matter. Of this the quantity is far within the limits. The nitrogen is considered as derived from animal remains, though some of it comes from the vegetation. In this water I am inclined to refer the nitrogen residues to the animal and vegetable organisms living in the water. Not coming from animals of a higher organism, there is little danger from disease germs. As the cold weather comes on the water will improve, as this is the worst time of the year for water exposed as this is. Chemically the water is safe; its danger comes from the growth in it.

Respectfully yours,

MAURICE PERKINS

REPORT ON ANALYSIS OF NYACK WATER.

(Made by Professor J. H. Stoller, prof. of biology, Union college)

Sample No. 1. From Main street reservoir, Nyack; one foot below surface.

Sample No. 2. From New pond at Congers, from boat 50 feet from dam; two feet below water surface.

the surface of the water in the two-quart bottle. It is perhaps significant that animals so large as crustacea should occur in a source of water supply. These animals are everywhere found in stagnant water, as pools, ditches and weedy ponds; they do not occur, I think, in streams.

In general I may add that the amount of living things was very large in sample No. 2, and rather large also in samples Nos. 1 and 3. In sample No. 1 there was a good deal debris; that is, fragments of plants and other dead organic matter.

(II) Bacteriological analysis

The samples for bacteriological analysis did not reach me till 7 p. m. September 10th, some 25 hours after they were shipped. I immediately made fermentation tube and gelatine plate cultures, using for the latter 1-40 cc. water for each plate, about 1-5 to 1-10 the amount used when fresh samples are used. The results are as follows:

1. Fermentation test

Sample No. 1.

Tube No. 1, 1-40 cc. water used; fluid rendered cloudy, but no gas.

Tube No. 2, 3-40 cc. water used; fluid rendered cloudy, but no gas.

Sample No. 2.

Tube No. 1, 1-40 cc. water used; fluid cloudy; no gas.

Tube No. 2, 3-40 cc. water used; fluid clear; no gas.

Sample No. 3.

Both tubes remained clear; no gas evolved.

These results show that *bacillus coli commune*, the common feces germ, was not present. (This germ always evolves gas in culture fluids containing glucose, the one here employed). The indication is that these sources of water supply are not subject to pollution from sewers or privies.

2. Putrefaction test

Sample No. 1. Result negative; no colonies developed.

Sample No. 2. One colony developed, indicating 40 bacteria per cc. present in the water.

Sample No. 3. Result negative; no colonies developed.

The indication afforded by these results is that these waters have an exceptionally low number of bacteria. Had a larger quantity of water been used for each gelatine plate culture, it is probable of course that positive results would have been reached in the cases of samples Nos. 1 and 3. It may also be considered that the germs in the samples of water were exposed to the freezing temperature for perhaps eight or ten hours, and after that to a low temperature for 16 or 18 hours longer. Possibly some of them died under this long exposure to cold. However, making allowance for all circumstances, the results reached would appear to indicate that so far as bacteria are concerned these waters are not objectionable.

JAMES H. STOLLER

Results of the physical, chemical and biological examinations

As a result of my examination of the stream, the reservoirs, the pond and lake, and the drainage area of the water supply, and a careful reading of the reports of the chemist and biologist in the light of what I saw as to the conditions under which the water exists and is taken for use, I am clearly of the opinion that while the water at the time of my examination may not have been *directly* detrimental to health, yet its character, and its surroundings render it entirely unfit for use as a potable supply.

The authorities of the village of South Nyack have requested that they be specifically advised by your board as to what steps they may take in order to secure an improvement in the character and condition of the water. On this question I have no hesitation in saying that though partial relief may be obtained by a series of improvements in the surroundings of the water, such as removing the dam forming the Congers pond and thus restoring the stream to its original channel; lowering the bed of the creek through the swamp and draining the swamp; passing and

enforcing rules for the protection of the streams entering the water supply, and improving the intake at the old pumping station; still the result of such improvements would probably be but partial and would be expensive to secure; filtration of the water supply will, however, if properly planned and executed, unquestionably give all the improvement desired, though the enactment of rules for the protection of the water-shed should, in any event, be done, whether filtration is adopted or not, as several points of distinct pollution on the water-shed were observed. The question—as to how the authorities of the village of South Nyack may secure filtration of the water supply furnished them—on which they desire explicit advice from your board, I shall not attempt to answer, as it involves the legal rights of the two villages and the prerogatives of your board, and I have simply collected the information available on the subject for your use in the consideration of the question. During my visit at the two Nyacks I was led to believe beyond question that the opposition to filtration is confined to the taxpayers of Nyack, and is not shared by either the citizens at large in that village nor by their authorities, who, however, are powerless to complete the improvements without an appropriation by the taxpayers. I beg to recommend therefore, that the State Board of Health take such steps as it may deem proper toward securing the filtration needed, and that rules for the protection of the water supply be prepared and enacted.

I am, dear sir,

Very truly yours,

OLIN H. LANDRETH,

Consulting engineer

SOUTH NYACK, N. Y., *September 29, 1898*

OLIN H. LANDRETH, *Consulting engineer New York State Board of Health:*

Dear Sir—No conditions of any kind were ever imposed by the village of South Nyack upon the Nyack Water Works Company, or its successor, as to the quality or quantity of water to be furnished to the inhabitants of South Nyack.

The people of South Nyack now pay and have always paid the same water rates as the people of Nyack.

Yours truly,

JOSEPH T. KELLY,
Clerk

SOUTH NYACK, N. Y., *September 29, 1898*

OLIN H. LANDRETH, *Consulting engineer New York State Board of Health, Albany, N. Y.:*

Dear Sir—Yours of the 26th inst. to hand. Herein you will please find copy of contract with Nyack Water Works Company for supply of water for five purposes to village of South Nyack. Said contract was continued from time to time with the Nyack Water Works Company, and when the water commissioners of the village of Nyack acquired the plant by condemnation the contract was allowed to continue on the same lines.

In reference to survey from intake to culvert of Erie railway the trustees do not feel as if they alone should bear the expense and the water commissioners cannot see that it would help them out of their present dilemma, so that drops.

Yours truly,

JOSEPH T. KELLY,
Clerk

This agreement made this 7th day of March, 1885, between the Nyack Water Works Company, of Nyack, county of Rockland and State of New York, party of the first part, and the board of trustees of the incorporated village of South Nyack, party of the second part.

Witnesseth, that the said Nyack Water Works Company for and in consideration of the covenants on the part of the party of the second part, hereinafter contained, doth covenant and agree to and with the said party of the second part to erect at its own cost, and as soon as the work and material can be obtained, five of "Matthews" patent single valve 4-inch steamer and double hose fire hydrants, in addition to those now erected, at such places within the limits of the said incorporated village of South Nyack as may be agreed upon between the said parties,

on streets where the said Nyack Water Works Company have now, or may hereafter construct water mains, and two of the said five hydrants shall, as soon as erected, be selected by the said board of trustees and become the property of the said incorporation, and the party of the first part agrees to supply the said village with a sufficient supply of water for fire purposes, for the period of three years from the 1st day of May, 1885. And the party of the second part agrees to pay to the said party of the first part the sum of two hundred and forty (240) dollars for the first year as soon as the tax can be collected therefor, and four hundred (400) dollars per year for the second and third years, in equal semi-annual payments on the first days of August and February, and the said party of the second part agrees to keep in repair and ready for use all fire hydrants and connecting pipes at its own costs. It being understood that the remaining three hydrants erected by the party of the first part, and the hydrant on the corner of Hillside and Clinton avenues, may be purchased by the party of the second part from the said Water Company for the sum of two hundred (200) dollars during the said term of three years. And, it is also agreed that the said party of the second part may erect, connect with the mains and maintain any number of hydrants within the incorporated limits of said village during said term of three years.

(Seal.)

NYACK WATER WORKS COMPANY.

WILLIAM VOORHIS,

President

AUGUSTUS M. VOORHIS,

Secretary

Witness:

FRED PERRY.

J. WINTERBOTTOM,

President

ISAAC M. VAN WAGNER,

HENRY DE BAUM,

JAMES W. BLAUVELT,

Trustees

Countersigned:

CHAS. H. MEEKER,

Clerk.

SOUTH NYACK, October 8, 1898

Prof. O. H. LANDRETH, *Union college, Schenectady, N. Y.:*

My dear Sir—Yours of the 6th inst. in remarking on flasks and bottles to hand. The flasks are the surest guide, as they were marked when taken from the water. The corks in the bottles were marked to correspond. On my return to Nyack, I placed the tags on the bottles, and am sure they corresponded with numbers on the corks.

The letter having been written several hours after sending the samples was subject to error, in that I there said No. 1, from Main Street reservoir, which was the order in which the samples were taken. And my best recollection now is that the letter is in error and the flasks and bottles are the correct thing.

I may say to you that the water commissioners of Nyack have expressed, through their president, the hope that the results of your investigation will be such that they will be forced to complete the filter bed.

Very truly yours,

JOSEPH T. KELLY,

Clerk village of South Nyack

Hon. C. W. ADAMS, *State engineer and surveyor:*

Sir—During the past summer and for years prior thereto the water supplied to the village of South Nyack has been of a nauseous and vile character.

Up to the year of 1896, the supply was furnished by a corporation called the Nyack Water Works company. The plant of that company subsequently became the property of the village of Nyack by condemnation proceedings and is now under the control and management of the board of water commissioners of the village of Nyack. This board of water commissioners adopted an extensive series of plans, comprising new service pipes (for the village of Nyack) new pumping station, and filtration plant. Before the work on the filtration plant was fairly under way, the funds in the hands of the commissioners gave out and work stopped. In the spring of 1898 an appropriation to complete the filter beds was asked for by the water commissioners, also another to extend the pipes in South Nyack, both of which appropriations were

The question of the supply of water being beyond the jurisdiction of the health board of the village of South Nyack recourse was had to the State Board of Health for relief, to whom complaint was made.

The State Board thereupon sent Prof. Olin H. Landreth, consulting engineer, to make an examination of the water supply, the water shed, etc.

Prof. Landreth made an extended, full and very careful examination of the subject and we believe his report is now before you.

We would respectfully call your attention to the fact that the board of water commissioners of the village of Nyack are desirous of furnishing the people of Nyack and South Nyack with pure potable water, but by the action of the tax payers, a minority of the people of Nyack, the hands of the commissioners are tied for want of funds, and what might have proved to be a panacea for the evils we complain of, a proper and effective filter is rendered an impossibility.

The water in the milder seasons of the year is, in every sense, offensive to touch, to taste, to smell, to view. In the cold season it is less so.

Is it not within the province of the powers vested in you by law possible for you to cause some earnest and effective measures to be taken which will cause the board of water commissioners of Nyack to furnish the inhabitants of this village a water which will not cause nausea by reason of lack of filtration.

We have no desire to have saddled upon the people a process which will result in a heavy and onerous tax, but what we do ask for is as beneficial to the people of our sister village as it is to ours.

It will also be a means of increasing the income of the village of Nyack thereby reducing its taxation in a proportionate degree.

Dated, South Nyack, November 1, 1898.

B. Y. FROST,
HOWARD VAN BUREN,
JOHN M. ROONEY,
A. H. BLACKLEDG.

Trustees village of South Nyack

S. R. BRADLEY,

President village of South Nyack

BRIEF IN SUPPORT OF THE PASSAGE OF A BILL FOR THE PROTECTION AND IMPROVEMENT OF THE PURITY OF WATER OF THE STATE.

(Prepared by Olin H. Landreth, consulting engineer.)

(A) The waters of the state are many of them seriously polluted:

- (1) By sewage discharged by cities and villages.
- (2) By garbage, manure, offal and other domestic waste.
- (3) By manufacturing refuse.

(B) The protection and the improvement of the purity of the waters of the state is demanded:

(1) On account of purely sanitary reasons:

- (a) To prevent transmission of specific water-borne diseases;
- (b) To improve general unsanitary conditions arising from noxious emanations, miasmatic or malarial influences.

(2) On account of riparian interests which are injured by pollution of the waters of the state:

- (a) By rendering them unfit or unwholesome for domestic use;
- (b) By impairing the value of dairy products, hay, etc.;
- (c) By destroying or driving away of the fish;
- (d) By causing ponds to be filled up;
- (e) By causing cattle and horses to refuse to drink them;
- (f) By causing disagreeable odors to arise from them;
- (g) By causing objectionable matters to be deposited on the banks and beds of streams and the surface of the water.

(C) The abatement of the pollution of the waters of the state calls for the devising and introduction of:

- (1) The most efficient and economical systems of sewage disposal.
- (2) The most efficient and economical systems of garbage disposal.

(3) The most efficient and economical systems of disposing of the numerous kinds of manufacturing refuse.

(D) The oversight of the purity of the waters of the state; the securing of useful information concerning them; and the devising of means for improving their purity should be made the specific duty of some public official or body; and the body to whom these duties naturally belong is the State Board of Health.

(E) In the execution of the means for abatement of pollution of the waters of the state, extensive interests will be affected and heavy expenses incurred.

(F) The importance of these interests and these expenditures call for the most careful and skillful consideration in the adoption of means and methods for abating the pollution of the waters.

(G) The subject of sewage disposal and of garbage disposal has undergone extensive changes and advance in the past few years and there are still very many questions pertaining to these subjects and to the subject of disposing of manufacturing refuse, which demand further investigation and experiment before the most efficient and economical methods shall be known for each class of conditions.

(H) Many of these questions demanding further investigation and experiment are general questions affecting all localities and conditions of the state while some are special and local and are applicable only to certain localities or conditions.

(I) It would be an unnecessary and wasteful procedure to require each municipality to investigate for itself the questions that are of common interest and importance to all or many of the municipalities, while it is reasonable that purely local or special matters should be investigated at the expense of the municipalities specially concerned in them.

(J) A judicious cooperation of effort between the state, as the representative of all municipalities on one hand, and certain municipalities interested in the investigation of special or local matters on the other, would appear the most feasible and just manner of avoiding the wasteful duplication of effort in the solution of the questions involved.

(K) Such cooperation is not novel even for the state of New York. The state is now cooperating with the United States government in the prosecution of its topographical survey and mapping of the state. It cooperates with municipalities and railroads in abolishing grade crossings. Cooperation identical in plan and purpose is now being carried on by the state of Massachusetts with the municipality of Brockton, and it has in the past accomplished excellent results by identically similar cooperation with other municipalities.

(A) The waters of the State are polluted.

The evidence of this fact is of two kinds: (1) Results of examinations of the waters of the state, and (2) Census of cities and towns disposing their sewage into the waters of the state.

The annual reports of the State Board of Health alone, without considering other examinations, contain numerous reports of the polluted condition of the waters of the state. The following list of cases of polluted waters has been drawn from the annual reports of the Board since 1889:

STREAM.	Location.	Examined by	Annual report.	Page.
Ausable river	Keeseville	Brown	1889	167
Susquehanna river.....	Binghamton.....	Kuichling.....	1889	84
Hudson river.....	Numerous places.....	Brown.....	1890	189
" "	" "	"	1891	888
" "	" "	"	1892	531
" "	" "	"	1893	690
Mohawk river.....	" "	"	1892	531
" "	" "	"	1893	680
Mongagon brook.....	Middletown	"	1892	160
Nepperham river	Yonkers	Investigation.....	1893	49
Newtown creek.....	Long Island City.....	"	1894	104
" "	" "	"	1895	117
" "	" "	"	1897	99
Mill creek.....	Flatbush	"	1894	113
Raquette river.....	Potsdam	Bogart	1895	327
Indian brook.....	Sing Sing.....	"	1895	384
Spring brook	Fort Plain.....	Schenck.....	1895	387
Hackensack creek.....	Nyack.....	"	1895	341
" "	"	Landreth.....	1898	.....
Steel's creek.....	Illion.....	Schenck.....	1895	353
Batten kill.....	Greenwich.....	"	1895	359
Delaware river.....	Walton	"	1895	363
" "	Roxbury	Landreth.....	1897	306
Dunkirk harbor.....	Dunkirk	Bogart.....	1896	294
Goose creek	"	"	1896	294
Salmon creek.....	Sodus.....	Schenck.....	1896	322
Chenango river	Binghamton.....	Bogart.....	1896	328
Westchester creek.....	Mt. Vernon	Adams.....	1896	332
Owego creek.....	Newark valley.....	Smelzer	1896	360
Susquehanna river	Owego.....	Schenck.....	1896	383
Chemung river.....	Elmira.....	Landreth.....	1897	133
" "	Corning.....	"	1897	133
" "	Painted Post.....	"	1897	133
Canisteo river.....	Addison	"	1897	133
" "	Hornellsville	Smelzer.....	1897	247

STREAM.	Location.	Examined by	Annual report	Page.
Lake Gleneida.....	Carmel.....	Bogart.....	1897	163
Oneida creek.....	Oneida.....	Landreth.....	1897	279
Van Cortlandt creek.....	Peekskill.....	".....	1898	.....
Fall kill creek.....	Poughkeepsie.....	".....	1898	.....
Jamaica bay.....	Arverne.....	".....	1898	.....
Saranac river.....	Saranac lake.....	".....	1898	.....
Cayadutta creek.....	Johnstown.....	".....	1898	.....
Cayaderoseros creek.....	Balston.....	Investigation.....	1899	.....
Saratoga lake.....	All shores.....	".....	1899	.....
Mohawk river.....	Above Rome.....	Landreth.....	1896	.....
Springfield stream.....	Long Island.....	".....	1898	.....
Valley stream.....	".....	".....	1898	.....
Schodack brook.....	".....	".....	1898	.....
East Meadow brook.....	".....	".....	1893	.....
Milburn stream.....	".....	".....	1898	.....
Wantagh stream.....	".....	".....	1898	.....
Simonson stream.....	".....	".....	1898	.....

Cities and villages disposing sewage into waters of the state:

An investigation of the municipalities of the state shows that there are in the state at least 29 cities with an aggregate population of 3,465,000 (1890); 95 villages with an aggregate population of 471,000 (1890), having sewer systems, without counting many villages below 2000 inhabitants also having sewer systems.

There are in the state, so far as I know, but seven disposal works for the treatment of sewage. These are located at White Plains, Far Rockaway, Coney island, Sheepshead bay, Chautauqua, Echota, Soldiers' home, Bath.

All of the other municipalities discharge their sewage directly into the waters of the state. Of the cities, New York, Brooklyn, Buffalo, and several of the smaller municipalities discharge into bodies of water so extensive as to insure against future harm, but for the remainder, more or less harmful results may surely be expected unless the discharge from them is modified by treatment.

During the year 1898 typhoid fever, the typical water-borne disease caused 1810 deaths in the state; 12 per cent more than for the average of the previous 10 years.

From the foregoing it may be considered as established that the waters of the state are, many of them, seriously polluted.

(B) The protection and the improvement of the purity of the waters of the state is demanded: (1) On account of sanitary reasons; (2) On account of riparian interests.

(1) The first or sanitary ground does not admit of discussion and does not require argument.

(2) Riparian interests.

Few principles of common law are better established than that the rights of riparian owners in waters include every thing pertaining to the waters which may have value to those owners, the quality of the waters as well as the quantity, and therefore that the pollution of waters to the extent of impairing the value to any owners, is an infringement of that owner's rights, and is actionable for injunction and indemnity. This principle of common law is so strong that though many of the states have enacted statutory laws for the protection of waters from pollution, the great majority of actions brought for injuries actually suffered are brought under the common law. Decisions in such cases, no matter where rendered, constitute judicial precedents almost or quite independent of state lines. Such decisions in which pollution of waters by sewage and by manufacturing refuse constituted the infringement of rights or the nuisance, have accumulated rapidly during the past few years, evidently owing to the increase of pollution with increase in population and manufacturing.

The relation of these decisions to the future of stream pollution and sewage disposal is important and pertinent.

Whenever it becomes generally understood that pollution by sewage and manufacturing waste may be made the ground for suits for damages, riparian owners will not be slow to take advantage of their rights, with the result that municipalities and manufacturing establishments will be forced to abate the pollution. This situation we are rapidly approaching in this state. An examination of the list of cities and villages enumerated above with some consideration to the circumstances of each one indicates that of the 29 cities something over one-half, and of the 95 villages not less than two-thirds will ultimately be required to provide means of sewage disposal other than crude discharge into streams. For the moderately near future I consider a moderate estimate will place not less than 10 cities and 50 vil-

lages on the list of those where sewage disposal will be a necessity; and at the present time I know of four cities and twice that number of villages where the question is even now a pressing one and calls for early solution. When the necessity for adoption of disposal works comes, these municipalities should be prepared to adopt and install the most efficient and economical system available. But at the present time no one can say with definiteness which of the numerous methods and systems is best; not only are many minor questions still unsolved, but a number of fundamental matters are at present very hazy and require extensive experimental investigation before we can consider them as established and their influences known.

Of one thing, however, we are certain: viz., that the cost of installation and of operation by even the most efficient methods is very heavy, and that there is strong reasons for believing that these costs can be very materially reduced by experimental investigations looking to the increase in capacity or rate of working, of some of the more promising methods. Especially is this the case with filtration, where the two elements of difficulty of handling and reducing the solid matters in sewage and the necessity of intermittence for oxidation, reduce the capacity rate to a small fraction of what is otherwise its limit in capacity. Experimental work is now being done in the matter of disposal of sewage at Lawrence, Mass.; Brockton, Mass.; Worcester, Mass., and Exeter, England. All of the work in Massachusetts is, however, in one particular direction and at Exeter in another and very narrow line, though one of great promise. Duplication of experimental work is not to be thought of where results are so made as to be reliable, but the fields of promising results is so great that there is work enough for a dozen experimental stations without duplication. It may be said that the results of English experiments are quantitatively of little value to us for the great difference in water consumption there and here makes the size of the plants and the composition of the sewage as well as its winter temperature, so different as to give totally different results for identical experiments. Touching the economic returns

of such experimental work the cost of installation of the disposal works for the 10 cities and the 50 villages will, at the lowest estimate, amount to \$2,000,000, and the annual cost of operation to at least \$300,000. If properly conducted experimental work shall result in a saving of only 10 per cent of these two items, it will amount to a saving of fixed investment of \$200,000, and a reduction of annual operating expenses of \$30,000 a year, representing a 5 per cent income from a capitalization of \$6,000,000.

FOOD AND DRUGS

REPORT

OF

WILLIS G. TUCKER, M. D., Ph. D.,

Director State Board of Health Laboratory

BAXTER T. SMELZER, *Secretary State Board of Health of New York, Albany, N. Y.:*

Sir — During the year ending December 31, 1898, 70 samples of drinking water have been received from different parts of the state by order of the Board, and of these, 58 which were sufficient in quantity and in satisfactory condition, have been analyzed and reported upon. Various samples of drugs, illuminating oils and miscellaneous substances have been examined, and various special investigations made, all work having been reported upon monthly as heretofore. A summary of all work done, with such reports as have not been elsewhere published, and tabulated results of the water-analyses made, is now transmitted as follows:

Jan. 14. Reports made upon analyses of water samples received from Dr. J. H. Fitch, health officer, New Scotland; Dr. S. B. McClure, health officer, Allegany; and Dr. J. S. McKay, health officer, Potsdam (two samples).

Jan. 19. Report made upon analysis of sample of water received from board of quarantine commissioners, Hoffman island, including determination of quality for boiler use, etc.

Jan. 21. Report made upon the examination of a sample of kerosene oil received from Rochester, January 13. This oil had a flashing point of 95° Fahr.

Feb. 5. Report made upon analysis of sample of water received from Dr. W. W. Munson, health officer, Otisco.

Feb. 7. Reports made upon the analysis of 11 samples of water from wells on school house sites, received from Dr. E. J. Beardsley of the board of education, Elmira.

Feb. 21. Reports made upon analysis of two samples of water received from Dr. George Lattin, health officer, Cattaraugus.

March 11. Reports made upon analyses of two samples of water received from Dr. J. L. Stillwell, Bloomingburgh.

March 22. Report made upon sanitary and qualitative mineral analysis of sample of water received from Dr. W. E. Milbank, Albany.

April 4. Report made upon analysis of sample of water received from Dr. F. H. Benedict, health officer, Weedsport.

April 14. Report made upon analysis of sample of water received from Dr. J. B. Hoyer, health officer, Middleport.

May 16. Reports made upon the analyses of three samples of water received from Dr. F. M. Bishop, health officer, Newark valley.

May 23. Reports made upon analyses of samples of water received from Dr. F. H. Benedict, health officer, Weedsport, and Dr. H. W. Van Derwerker, health officer, Sandy Hill.

June 3. Reports made upon analyses of two samples of water received from Dr. F. T. Comstock, health officer, Ilion.

July 7. Report made upon analysis of sample of water received from Dr. F. A. W. Rivet, health officer, Green Island.

July 8. Report made as follows upon the examination of dust-coated leaves and twigs alleged to constitute a nuisance and complained of by Mr. B. F. Hawes of Oakfield:

ALBANY, *July 8, 1898*

DR. B. T. SMELZER, *Secretary State Board of Health of New York, Albany:*

Dear Sir — Referring to your communication of the 1st, concerning an alleged nuisance caused by the manufacture of plaster of paris, and enclosing copy of letter from Mr. B. F. Hawes, Oakfield, N. Y., relating to the same, and also some leaves and twigs, dust-coated, of which you directed an examination

to be made, I would respectfully report that an examination of the latter shows that the foreign matter which, more or less, completely covers the surface of the leaves, contains, and essentially consists of, sulphate of lime, or plaster of paris.

In reply to your request that I would state whether, in my judgment, "it is detrimental to health," I would say that this substance is not in itself in any sense poisonous, but that any such inert mineral matter may become a nuisance if diffused in air, or added, in any considerable quantity, to articles of food or drink, and under these circumstances, may certainly be detrimental to health. It would appear to me that in such a case as this the reality and extent of the nuisance may best be determined by an actual inspection made by a competent health officer. To constitute a nuisance, detrimental to health, it would not seem to be necessary to show that the substance, alleged to be diffused to considerable distances and in large quantity, so that it settles upon trees, fruit and the like, and is driven into houses so that it "can be swept up in measurable quantities," and is "breathed into the lungs, night and day, by all who are within its reach," is a poison *per se*, since many substances which are comparatively inert might prove highly objectionable, and even distinctly detrimental to health under these circumstances. I should therefore respectfully recommend that the health officer of the town be directed to examine into this matter and report upon the reality and extent of the nuisance complained of.

Very respectfully,

WILLIS G. TUCKER, M. D.,

Director

July 28. Reports made upon the analyses of four samples of water received from Mr. George W. Hall, village clerk, Cattaraugus.

Aug. 1. Advised as to treatment of nuisance caused by mass of decaying pea-vines existing at Oneida.

Aug. 16. Reports made upon the analyses of two samples of water received from Dr. G. S. Goff, health officer, Corning.

Aug. 22. Report made upon the analysis of sample of water received from the board of health of Mount Vernon.

Sept. 3. Reports made upon the analyses of two samples of water received from Dr. G. S. Goff, health officer, Corning.

Sept. 19. Reports made upon the analyses of three samples of water received from Dr. Walter A. Scott, health officer, Niagara Falls.

Sept. 22. Reports made upon the examination of 59 samples of drugs collected in New York city and neighboring places, as follows:

ALBANY, September 22, 1898

Dr. B. T. SMELZER, *Secretary State Board of Health of New York, Albany:*

Dear Sir —I beg to report herewith upon the examination of 59 samples of drugs received on July 19 and 21 from the office of the Board by your order. These samples were collected, as I am informed, by Mr. Stuart, assistant secretary, in New York city, Yonkers, White Plains, Mount Vernon, Peekskill and Sing Sing, July 15-18, 1898. They are numbered from 10,366 to 10,424, both inclusive, and of these samples there were found to be of good or fair quality, 44, and of inferior quality or otherwise to vary materially from the pharmacopoeial standard, 15. Reports upon these latter samples are inclosed herewith, and the following is a summary of the articles examined:

	Good or fair.	Inferior.
Tincture of iodine.....	5	1
Ammonia water	4	2
Diluted acetic acid.....	3	3
Diluted hydrochloric acid.....	3	1
Diluted phosphoric acid.....	3	2
Potassium bi-tartrate (cream of tartar).	4	0
Compound spirit of ether.....	2	2
Ether	4	2
Chloroform	4	0
Creosote	4	2
Seidlitz powders	4	0
Precipitated sulphur	4	0
Totals	44	15

A word of comment concerning a few of these samples may not be out of place. No. 10,377 is much above the proper strength of ammonia water and the intention may have been to sell a superior article. No. 10,380 while beyond our established standard of strength is not sufficiently concentrated to be a very important error. No. 10,383 is not far below the strength of the undiluted acid. Nos. 10,387 and 10,390, while beyond our established standard of strength are not sufficiently concentrated to constitute a very important error.

Very respectfully,

WILLIS G. TUCKER, M. D.,

Director

The following tables give name and place of business of dealers from whom the above-mentioned samples were purchased, with results of the examination of the same:

Diluted Acetic Acid (*Acidum Aceticum Dilutum*, U. S. P.)

Six samples examined, of which there were of good quality three, and excessive strength three. There are probably few articles of the pharmacopoeia, which are more frequently carelessly prepared and, therefore, more variable in strength than this preparation. Diluted acetic acid should contain 6 per cent of absolute acid. Samples containing from 5.5 to 7.5 per cent are rated as good; 4.5 to 5.5 per cent fair; under 4.5 per cent inferior, and over 7.5 per cent as of excessive strength. The samples examined varied from 5.88 to 28.58 per cent as shown in the following table:

Number of sample	Date of collection	OF WHOM PURCHASED	Where purchased	Per cent. absolute acid	Quality
10378	1898 July	Wm. Mettenheimer.....	New York city.....	6.23	Good
10379		F. W. Schoonmaker.....	do.....	5.88	do
10380		C. E. Penfield.....	Mount Vernon.....	8.97	Excessive strength
10381		Ferdinand Olivet.....	do.....	6.08	Good
10382		Griffin Drug & Paint Co.....	Peekskill.....	13.11	Excessive strength
10383		Boyd's Central Pharmacy.....	do.....	28.58	do

Water of ammonia. (*Aqua ammoniac, U. S. P.*)

Six samples examined, of which there were of good quality, three; fair, one; inferior, one; excessive strength, one. The pharmacopœia requires ten per cent by weight of the gas. The samples examined varied from 2.90 per cent to 25.32 per cent, the first samples being of very inferior quality and the last consisting of "stronger ammonia water" of fair quality.

Number of sample	Date of collection	OF WHOM PURCHASED	Where purchased	Per cent. of ammonia gas	Quality
10372	1898 July	Wm. Mettenheimer.....	New York city.....	2.90	Inferior
10373		F. W. Schoonmaker	do	9.50	Good
10374		C. E. Penfield	Mount Vernon.....	7.85	Fair
10375		Ferdinand Olivet.....	do	12.20	Good
10376		Griffin Drug & Paint Co.....	Pekskill	9.30	do
10377		Boyd's Central Pharmacy.....	do	25.32	Excessive strength

Chloroform. (*Chloroformum*, U. S. P.)

Chloroform should contain from 99 to 99.4 per cent by weight of absolute chloroform and have a specific gravity not below 1.473 at 25 degrees C. The four samples examined varied in specific gravity from 1.473 to 1.479 but they were all rated as of good quality as shown in the table.

Number of sample	Date of collection	OF WHOM PURCHASED	Where purchased	Specific gravity at 25 degrees Cent.	Quality
10407	1898 July	Edward Plummer	New York city	1.473	Good
10408		Louis G. Bates & Co	do	1.473	do
10409		F. H. Nowill	White Plains.....	1.479	do
10410		S. Olin Washburne	Sing Sing	1.474	do

Creosote. (*Creosotum*, U. S. P.)

This is described in the pharmacopeia as "a mixture of phenols, chiefly guaiacol and creosol, obtained during the distillation of wood-tar, preferably of that derived from the beech." Crude carbolie acid, sometimes designated in the trade "coal-tar creosote," and consisting chiefly of phenol and cresol, is very commonly sold for real creosote because much cheaper, but the substitution should not be made, as the articles possess different properties and when creosote is called for the true article should be supplied. From the following table it will be seen that of the six samples examined four were of good quality and two consisted chiefly of carbolie acid:

Number of sample	Date of collection	OF WHOM PURCHASED	Where purchased	Quality
10411	1898 July	Wm. Mettenheimer.....	New York city	Good
10412		F. W. Schoonmaker	do	do
10413		John Stahl, jr.	Yonkers.....	do
10414		C. E. Penfield	Mount Vernon.....	do
10415		J. C. Russell	Sing Sing	Consists largely of carbolie acid. Error in sale
10416	18	Griffin Drug & Paint Co.....	Peekskill.....	Consists largely of carbolie acid. Error in sale

Ether. (*Aether*, *U. S. P.*)

Six samples examined of which four are of good and two of inferior quality. This article was formerly denominated "stronger ether" and should contain about 96 per cent of weight of absolute ether and have a specific gravity of from 0.714 to 0.717 at 25 deg. C. The term "sulphuric ether" is not recognized in the pharmacopœia and but one quality is included therein. Stronger ether is generally used as an anæsthetic, and ought always to be kept in stock by the pharmacist. When it is called for by its official name in full it ought always to be supplied, and the substitution of common ether or the so-called "washed ether" of the trade is entirely inexcusable. A description of the samples examined follows:

Number of sample	Date of collection	OF WHOM PURCHASED	Where purchased	Specific gravity at 25 degrees Cent.	Quality
10401	July 1898	Wm. Mettenheimer.....	New York city.....	0.716	Good
10402		F. W. Schoonmaker.....	do.....	0.746	Inferior
10403		John Stahl, jr.....	Yonkers.....	0.719	Good
10404		C. E. Penfield.....	Mount Vernon.....	0.721	do
10405		J. C. Russell.....	Sing Sing.....	0.755	Inferior
10406		Griffin Drug & Paint Co.....	Peekskill.....	0.723	Good

Compound Spirit of Ether. (*Spiritus Aetheris Compositus, U. S. P.*)

Four samples examined, of which there were of good quality, two, and inferior, two. Concerning this article, which is a medicinal substance of real value but the use of which has been largely abandoned because so generally of little or no real value as sold in the stores, I quote from a previous report: Compound spirit of ether or "Hoffman's anodyne" is frequently prescribed by physicians and often employed as a household remedy and while an article of good quality can be procured from responsible manufacturers, or prepared without difficulty by the intelligent and careful pharmacist, the fact is that a spurious article answering to none of the requirements of the pharmacopoeia is generally sold in its stead, because it is cheaper. This cheap and worthless article, obtained as a secondary product in the manufacture of ether, consists chiefly of alcohol, ether and water, with little or none of the ethereal oil upon which the virtue of the preparation largely depends. Dealers may urge that the sale of this spurious article as a household remedy to people who would complain of the price necessarily charged for a genuine article is excusable; but without admitting this as a valid excuse for dispensing a worthless drug, it is evident that its sale in response to a physician's prescription or written order, is unwarranted and the habit of keeping two qualities of official drugs cannot be too strongly condemned.

The specific gravity of this preparation is not stated in the pharmacopoeia, but it should be about 0.796. As made by the process laid down in the pharmacopoeia of 1870, in which ether, and not stronger ether, was employed and more of the ethereal oil was used, it had a specific gravity of 0.815, but the specific gravity alone is no criterion of quality. The specific gravity of the samples examined varied from 0.792 to 0.821, and particulars concerning the samples examined follow:

Compound Spirit of Ether

Number of Sample	Date of Collection	OF WHOM PURCHASED	Where purchased	Specific gravity at 25 degrees, Cent.	Quality
10397	1898 July 15	Edward Plummer.....	New York City.....	0.821	Inferior
10398	15	Louis A. Bates Co.....	do	0.804	Inferior
10399	16	F. H. Nowill.....	White Plains.....	0.798	Good
10400	18	S. Olin Washburne.....	Sing Sing.....	0.792	Good

Diluted hydrochloric acid. (*Acidum hydrochloricum dilutum*, U. S. P.)

Four samples examined, of which there were of good quality, two; fair, one; and of excessive strength, one. The pharmacopoeia requires ten per cent of the absolute acid. The samples varied from 7.70 to 13.10 per cent. In rating them those containing from 9 to 12.5 per cent have been classed as good; 7.5 to 8.9, fair; below 7.5, inferior; and over 12.5 excessive strength. Particulars concerning the samples are appended:

Number of sample	Date of collection	OF WHOM PURCHASED	Where purchased	Per cent. of absolute acid	Quality
10384	July 1898	Edward Plummer.....	New York city.....	9.7	Good
10385	15	Louis A. Bates Co.....	do	11.0	do
10386	16	F. H. Nowill	White Plains	7.7	Fair
10387	18	S. Olin Washburne	Sing Sing.....	13.1	Excessive strength

Tincture of iodine. (*Tinctura iodi*, U. S. P.)

Six samples examined. The formula for the preparation of this important article was changed in the last revision of the pharmacopœia, but its strength is not very different. It formerly contained 8 per cent of iodine, and now contains 7 grams in 100 cubic centimeters of alcohol. Of the 6 samples examined, there were of good quality 2; fair, 3; inferior, 1. Samples containing from 6 to 9 grams of iodine in 100 cubic centimeters are rated as of good quality; from 5 to 6, fair; under 5, inferior, and over 9 excessive strength. The samples examined varied from 4.23 to 7.27 grams of iodine in 100 cubic centimeters and particulars concerning the samples are appended.

Number of sample	Date of collection	OF WHOM PURCHASED	Where purchased	Grams of iodine in 100 c. c.	Quality
10366	July	1898	John Stahl, jr	5.00	Fair
10367	16	Wm. Mettenheimer.....	New York city.....	4.23	Inferior
10368	16	Charles E. Penfield.....	Mount Vernon.....	7.27	Good
10369	15	F. W. Schoonmaker	New York city.....	7.09	do
10370	18	J. C. Russell	Sing Sing	5.90	Fair
10371	18	Griffin Drug & Paint Co.....	Peekskill.....	5.48	do

Diluted phosphoric acid. (*Acidum phosphoricum dilutum*, U. S. P.)

This preparation shall contain 10 per cent of absolute orthophosphoric acid. In rating these samples the same standards are employed as for diluted hydrochloric acid, which see. Five samples were examined, of which there were of good quality, three, and of excessive strength, two. The samples varied in strength from 11.0 to 19.5 per cent. Particulars concerning the samples are appended:

Number of sample	Date of collection	OF WHOM PURCHASED	Where purchased	Per cent of absolute acid	Quality
10388	July 15	Wm. Mettenheimer.....	New York city.....	19.5	Excessive strength
10389	15	F. W. Schoonmaker	do	11.3	Good
10390	16	C. E. Penfield.....	Mount Vernon.....	13.3	Excessive strength
10391	16	Ferdinand Olivet.....	do .....	.....	Good
10392	18	Griffin Drug & Paint Co.....	Pekskill.....	11.0	do

Precipitated sulphur. (*Sulphur precipitatum*, U. S. P.)

Four samples examined, three of which were of good, and one of fair quality. Particulars concerning the samples are appended:

Number of Sample	Date of Collection	OF WHOM PURCHASED	Where purchased	Quality
10121	July	15 Edward Plummer.....	New York city.....	Good
10422		15 Louis A. Bates Co.....	do.....	Good
10423		16 F. H. Nowell.....	White Plains.....	Fair
10124		18 S. Olin Washburne....	Sing Sing.....	Good

Oct. 6. Reports made upon the analyses of samples of water received from O. D. Woodford, president of the village of Castleton, and from A. P. Sedgwick, president of the board of health of Caledonia.

Oct. 15. Reports made upon the analyses of two samples of water received from Dr. W. A. Scott, health officer, Niagara Falls, and one sample received from Dr. John F. Fitzgerald, superintendent Rome state custodial asylum.

Oct. 31. Reports made upon the analyses of samples of water received from George I. Lincoln, superintendent Thomas asylum, Iroquois, and from Dr. B. P. Andrews, health officer, Dansville.

Nov. 12. Reports made upon the analyses of two samples of water received from Dr. G. H. Beers, health officer, Ticonderoga.

Nov. 18. Reports made upon the analyses of samples of water received from John M. Root, secretary board of health, Esperance, and Dr. John B. Hoyer, health officer, Middleport.

Nov. 23. Report made upon analyses of samples of water received from Dr. F. F. Comstock, health officer, Ilion.

Dec. 16. Report made upon analyses of three samples of water from the Cayudutta creek and its tributaries at Johnstown, and upon an inspection of the localities from which the samples were taken, as follows:

ALBANY, *December 16, 1898*

Dr. B. T. SMELZER, *Secretary State Board of Health of New York, Albany:*

Dear Sir—In conformity with instructions received from you in July last, I have made analyses for the city of Johnstown, and by arrangement with Professor O. H. Landreth, C. E., of Schenectady, of three samples of water taken from the Cayudutta creek and its tributaries, which flow through the city of Johnstown. The samples, labelled Nos. 1, 2 and 3, were taken by Professor Landreth, who forwarded them to me, and the general plan for the examination, which, under existing circumstances was necessarily somewhat limited in its extent, was agreed upon between us.

From a sketch accompanying the samples it appeared that No.

2 was taken at the railroad bridge from the Argersinger creek and near its confluence with the creek flowing from Schriver's pond; No. 3 from the latter creek just above its confluence with the Argersinger creek, and No. 1 from the Cayudutta creek below Stewart's pond. I was not present when these samples were taken, but on September 24th, and subsequently to the examination of the samples, I went to Johnstown, and, in company with Professor Landreth, visited the localities and made a general inspection of the streams and ponds and their surroundings. We inspected Schriver's pond and the stream tributary thereto and followed its outlet to its point of confluence with the Argersinger creek near the railroad bridge, and also the canal connecting the Cayudutta creek with the Argersinger creek, from which locality we followed the creek down for some distance toward the point at which sample No. 1 had been taken. Recent rains had occurred and the streams were running pretty full, but the waters showed much floating and suspended foreign matter and filth, due to the sewage and tannery wastes, turned into them within the limits of Johnstown, and, as I am informed, at Gloversville above. The banks and bed of the stream at various points showed deposits, indicating that precipitation had taken place in the water, and I am informed that such deposits may be observed along the course of the creek for several miles below the city. Such deposits as these are generally found in streams polluted like these and are due in part to natural sedimentation; in part to the precipitation occasioned by the finely divided clay carried in the water, and in part, very probably, to the action of chemical agents added to the waters by the tanneries and manufacturing establishments upon the organic matters which they contain.

I have been asked to give an opinion, based upon the results of the chemical examination of the samples, and of my inspection of the streams and their surroundings, as to "(a) What effect the sewage and the tannery waste and chemicals will have on the sanitary condition of the creeks, both waters and bed, below the city. (b) The effect the tannery waste and chemicals would probably have on the bacterial action of intermittent sand filters if such

should be adopted. (c) The effect the tannery waste and chemicals would probably have on the precipitating action of chemical precipitation works if such should be adopted."

The results of the examinations made, expressed in parts per 100,000, are as follows:

	No. 1.	No. 2.	No. 3.
Chlorine in chlorides	2.90	3.60	1.90
Total solids	30.80	32.60	35.60
Total organic and volatile matter.....	10.20	11.20	8.80
Total mineral matter.....	20.60	21.40	26.80
Dissolved solids.....	26.60	27.80	32.80
Dissolved organic and volatile matter.....	9.60	10.80	8.20
Dissolved mineral matter	17.00	17.00	24.60
Suspended solids	4.20	4.80	2.80
Suspended organic and volatile matter	0.60	0.40	0.60
Suspended mineral matter.....	3.60	4.40	2.20
Alumina	Trace	Trace	Trace
Calcium as sulphate	15.20	13.20	16.20
Arsenic	None	None	None

Color and appearance—Yellowish tint; slight turbidity; considerable brownish sediment.
All essentially alike.

Odor at 100 degrees Fahrenheit.—All have slight odor.

From these results it appears that the waters are much less impure than might have been expected when the amount of polluting material discharged into the streams is considered. If the samples fairly represent the average quality of the waters of the streams, as I believe to be the case from the manner in which they were collected, it is evident that precipitation has removed much of the matter added by the tanneries and as sewage. Chlorine, present as chlorides and chiefly as sodium chloride or common salt, may ordinarily be taken as a reasonably fair measure of past pollution by sewage, since it is contained in all sewage and is probably in no way materially removed from the water. In the present case, however, it is probably in part added by the tanneries which employ common salt and some hydrochloric acid in their operations, and it is very high in the case of Nos. 1 and 2, when compared with the quantity in the waters of ordinary streams, and even such as receive considerable sewage. Further comparison of the results shows that No. 3, while containing more solids in solution, contains less in suspension, and more organic and volatile matter, and more chlorine than do the other sam-

ples. In No. 1 the chlorine and organic and volatile matter are less than in No. 2, and more than in No. 3. The color, general appearance and odor of the three samples were very similar, and lime was the chief mineral constituent of the solid residue in each case. They all contained traces of alumina, and although alum is largely used by the tanneries, it was not to be expected that it would appear in the waters as such in appreciable quantities. Arsenic also is said to be employed, but no trace of it was detected in the samples.

Replying to the questions propounded and above stated, I would say that in my opinion, based upon the chemical examination of the samples submitted and my inspection of the streams (a) that the discharge of sewage and of tannery waste into the streams and ponds contaminates the waters, both waters and beds, below the city, rendering them objectionable and offensive to the senses, and occasioning deposits in their beds and along their banks, which, when exposed to the air at low stages, and especially during hot weather, must evolve unpleasant and deleterious odors as a result of the decay of the organic matters which these deposits contain. So long as the present defilement of these streams continues it is evident that the nuisance occasioned by them will be increased by exposure of the sides and beds such as occurs during low stages of the waters, and, therefore, I would view with disfavor any plan which contemplates lowering the level of any of the ponds while present conditions exist, and unless the deposits in these ponds be immediately removed by dredging them. I do not see that any advantage could result from draining any of them, and such a course, I think, would be decidedly objectionable unless the deposits were at the same time removed. If the pollution of these ponds be discontinued and their surface maintained at the present level, it may be hoped that in time they will purify themselves by natural processes, or at least, that their condition will become less objectionable than at present. (b) It seems to me not improbable that the discharge of such agents as lime, and salts of alumina and iron, bichromate of potash and other chemicals which are employed in the tan-

neries, and especially should such contain arsenic, into the streams might interfere somewhat with "the bacterial action of intermittent sand filters" and diminish their efficiency, but recently conducted experiments at the Lawrence experiment station in Massachusetts would seem to indicate that such sewage as tannery wastes may be satisfactorily filtered, and that such difficulties as arise in certain cases are by no means insurmountable in practice.

(c) It would seem to me probable, when the peculiar pollution of these streams is considered, and the present condition of the waters as shown by the analyses, and of the beds of the streams and bottoms of the ponds is also taken into consideration, that the discharge of such chemical agents, and their by-products, as are added to the streams might, and in fact undoubtedly does at the present time, aid in producing a precipitation of various of the impurities present in the waters. But I am clearly of opinion that the sewage of Johnstown, and the tannery wastes and chemicals ought not to be added to the streams, but should be separately disposed of, and in such case I think that the chemical agents added would not interfere with the operation of precipitation works, should such be established, but, on the contrary, would probably prove to be an aid in their operation.

Very respectfully,

WILLIS G. TUCKER,

Director

December 29. Reports made upon the analyses of samples of water received from Dr. C. Oliver Sumner, health officer, Norwood, and Dr. Francis M. Bishop, health officer, Newark Valley.

In addition to the above a large number of letters of inquiry have been received relating to food and drug adulteration, illuminating oils, the sale of poisons and proprietary medicines, and legislation pertaining to these and similar matters, and all such letters have been promptly answered and the desired information given to the writers wherever practicable to do so.

Tabulated results of the water analyses made during the year are appended. The analyses give the physical properties of each

sample (color, turbidity, sediment and odor), chlorine in chlorides; free and albuminoid ammonia; nitrites; total solids; loss and behavior on ignition; mineral matter, and such other determinations in special cases as may have been deemed necessary, and these results have been sufficient to base upon them an opinion as to the quality of the water examined for domestic use, and to supply such further information as may, in special cases, have been desired. In all cases those who have sent samples have been requested to furnish information concerning the samples, and the knowledge thus contained of the nature of the source of supply, its surroundings and possible contaminations, has aided in forming an opinion as to the quality of the water and its suitability for domestic uses.

Respectfully submitted,

WILLIS G. TUCKER,

Director State Board of Health Laboratory

ALBANY, N. Y., *January 1, 1899.*

100° F.	PARTS PER 100,000							Number
	Chlorine	Free ammonia	Albuminoid ammonia	Nitrites	Total solids	Loss on ignition	Mineral matter	
.....	7.20	0.0415	0.0133	Present.....	59.60	6.20	53.40	413
.....	1.20	Trace	0.0018	None	32.80	5.60	27.20	414
.....	49.50	0.0375	0.0083	Present.....	175.60	48.40	127.20	415
.....	43.00	0.0005	0.0068	None	174.20	46.40	127.80	416
.....	22.50	0.0350	0.0018	None	57.80	9.20	48.60	417
.....	2.20	0.0038	0.0060	Present. ...	47.80	7.80	40.00	418
ht.....	1.90	Trace	0.0023	None	32.60	4.80	27.80	419
ht.....	1.90	Trace	0.0023	Trace	30.60	4.80	25.80	420
.....	0.90	Trace	0.0015	None	19.80	2.60	17.20	421
.....	2.90	Trace	0.0022	Faint trace.	36.20	6.80	29.40	422
.....	4.10	Trace	0.0015	None	15.60	5.80	9.80	423
.....	0.70	0.0017	0.0024	None	16.20	2.40	13.80	424
.....	1.90	Trace	0.0022	None	24.80	4.80	20.00	425
.....	3.90	0.0052	0.0037	Present.....	49.80	8.40	41.40	426
.....	0.60	0.0005	0.0024	None	15.20	3.80	11.40	427
.....	8.40	Trace	0.0023	None	74.20	21.60	52.60	428
.....	0.60	Trace	0.0023	None	12.80	5.20	7.60	429
.....	0.10	0.0005	0.0028	Faint trace.	10.80	2.20	8.60	430
.....	2.40	0.0018	0.0037	Trace	37.40	6.20	31.20	431
.....	1.80	0.0013	0.0032	None	24.40	4.20	20.20	432
.....	1.40	0.0017	0.0043	None	9.80	3.20	6.60	433
ht.....	0.45	0.0013	0.0028	None	22.20	2.40	19.80	434
.....	8.40	0.0025	0.0029	Present.....	109.80	22.60	77.20	435
.....	7.70	0.0025	0.0047	Trace	69.60	14.20	55.40	436
.....	1.40	.....	.....	.....	27.80	8.40	19.40	437
.....	0.60	.....	.....	.....	67.60	9.80	57.80	438
Tensive	2.00	.....	.....	.....	143.80	84.00	59.80	439
.....	0.60	0.0070	0.0037	None	264.20	46.60	217.60	440
.....	0.20	None	0.0015	None	3.20	0.80	2.40	441
.....	0.20	0.1390	0.0153	Present.....	23.80	3.60	19.20	442
.....	8.80	0.0020	0.0043	Present.....	106.80	27.20	79.60	443
ht.....	8.90	0.0210	0.0038	Present.....	52.60	15.80	36.80	444
.....	0.10	0.0020	0.0028	Faint trace.	12.60	3.20	9.40	445
.....	0.20	None	0.0015	Faint trace.	12.40	3.20	9.20	446
.....	0.15	0.0013	0.0022	Present.....	16.60	5.20	11.40	447
ht.....	3.70	0.0015	0.0027	Faint trace.	34.60	13.80	20.80	448
.....	1.40	0.0013	0.0018	Present.....	29.20	7.80	21.40	449
.....	1.60	Trace	0.0016	Trace.....	27.80	7.20	20.60	450
ht.....	0.70	0.0015	0.0057	None	11.80	5.60	6.20	451
.....	1.50	0.0020	0.0018	Present.....	29.40	8.00	21.40	452
.....	1.60	Trace	0.0016	None	28.20	7.40	20.80	453
.....	5.20	0.0055	0.0038	Present.....	86.40	21.80	64.60	454
.....	11.10	0.0013	0.0062	Present.....	98.20	23.80	74.40	455
.....	6.80	0.0011	0.0035	Present.....	79.80	21.60	58.20	456
.....	0.20	0.0070	0.0058	None	16.60	5.80	10.80	457
.....	6.40	0.0095	0.0056	Present.....	126.80	41.40	85.40	458
.....	0.50	0.0058	0.0128	None	17.80	6.80	11.00	459
.....	0.60	0.0025	0.0038	None	13.40	5.80	7.60	460
ht.....	0.50	0.0013	0.0050	Present.....	28.20	6.40	21.80	461
.....	1.30	0.0095	0.0042	None	25.20	4.40	20.80	462
.....	5.50	Trace	0.0018	Present.....	71.20	22.40	48.80	463
.....	0.10	0.0017	0.0030	None	9.80	2.60	7.20	464
.....	0.10	0.0020	0.0040	None	11.40	4.20	7.20	465
.....	5.20	0.0030	0.0050	Faint trace.	49.60	10.80	38.80	466
.....	10.30	0.0250	0.0062	Present.....	73.80	14.60	59.20	467
.....	0.70	Trace	0.0022	Trace	31.20	6.20	25.00	468
.....	5.80	0.0027	0.0071	Faint trace.	70.80	26.60	44.20	469
.....	1.50	Trace	0.0023	Trace	42.20	14.80	27.40	470

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**REPORT OF DANIEL LEWIS, M. D., DELEGATE TO THE PURE
FOOD CONGRESS**

Presented at meeting of Board, April 1, 1898

The undersigned begs leave to submit the following report of the Pure food congress, to which he was elected a delegate at the February meeting of the State Board of Health:

The congress was called through the agency of the Department of agriculture and met in the city of Washington, D. C., March 2, 1898, for the purpose of effecting a permanent organization to promote national legislation to secure pure food, drink and drugs. The attendance was large, as delegates from all bodies directly interested had been chosen, including state boards of health.

Mr. J. E. Blackburn, of Ohio, was chosen permanent president, and Alexander Wedderburn, of Washington, secretary.

The basis of general discussion was the pure food and drug bill now before the House of Representatives, known as the Brosius bill, and its author, Representative Brosius, of Philadelphia, addressed the congress, and in the course of his remarks said:

"You have observed in recent years, I think, the growth of one of the crying evils of our age—the adulteration of human food. I think you will agree with me that no cause in the whole range of service which one can render to another, or to his country, is higher than to provide a cure for this terrible curse of food adulteration. I am very much interested in the subject. The more I contemplate it the more enormous it appears, the firmer hold it takes upon me. I can't let it go. I can't abandon this subject till we have secured some legislation to mitigate, if we cannot entirely cure, the evils of food adulteration.

"We are 70,000,000 and upward of the noblest people; our annual food bill is not a cent less than \$5,000,000,000, and 2 per cent of that is, I believe, for worthless stuff. That is \$100,000,000. Ten per cent of that, or \$10,000,000 worth, is poison, deleterious to health and life. A celebrated chemist, a few years ago said: 'Of the 376 articles used on the tables of the people, 255

of them are adulterated. These figures may be to some extent approximation, but they are sufficiently accurate to convey to our minds a fair idea of the enormous waste, the fraud, I had almost said murder, that masquerades in this country under the guise of commerce in food products. What may be said about food may be said also of drugs. No class of people have a greater stake in this crusade against adulteration and poisoning of foods and drugs and drinks than the medical profession.' ”

Mr. Wilson, secretary of agriculture, also addressed the congress, during which he said:

“The Department of agriculture has been making efforts during the past year, and will continue to make those efforts to find new markets for our products abroad. It is very difficult to establish markets in foreign countries if our goods are not what they are represented to be. If some of us send honest creamery butter abroad and others send oleomargarine, the American good name is injured, and it is only a question of time when our customers abroad will learn to distrust us and look to other countries for pure food. So it is with many other things. The drugs of the United States which our physicians prescribe for us when sick should be what they are represented to be, but it is a well-known fact that they are not.

“We have evidence, however, that many of the imports from foreign countries are not what they are represented. There are plenty of rascals in other countries, and if the time ever comes when we must reason with another nation, we will have quite as much to say on that subject as anybody else. We are pretty well prepared along those lines. But that is no excuse for us. Because other people send us doctored goods is no reason why we should do the same thing. The people of the United States should rise to higher levels.”

These abstracts are made as indicative of the need for legislation on this subject. Many amendments to the Brosius bill were agreed upon by the Congress, none of which, however, change its purpose to secure protection against food and drug adulteration by federal law.

The only question involved in the proposed plan is the possible effect upon the administration of state laws, which, in many instances, are adequate for the protection of our own people if properly administered. The desired effect upon commerce with foreign nations can only be secured through such a national bureau as the proposed legislation provides.

Commercial interests dominated the congress, however, professional attendance being comparatively small and sparsely represented in the organization of the meeting.

Respectfully submitted,

DANIEL LEWIS,

Delegate from New York State Board of Health

Memorial from the National pure food and drug congress

April 12, 1898 — Referred to the Committee on agriculture and forestry and ordered to be printed.

Mr. Faulkner presented the following memorial from the National pure food and drug congress that assembled in the city of Washington, D. C., March 2, 1898, representing 21 national organizations, and over 150 state and local organizations, favoring legislation for the prevention of the adulteration of food, drugs, etc.; in the District of Columbia and the territories.

MEMORIAL OF THE NATIONAL PURE FOOD AND DRUG CONGRESS

To the Congress of the United States:

Your petitioners respectfully recite:

That there assembled in the city of Washington, D. C., on the second of March, 1898, in response to a call for a National Pure Food and Drug Congress, representatives of 21 national organizations, over 150 state and local organizations, and delegates appointed by the governors of many of the states and territories, and by the commissioners of the District of Columbia, the Secretary of Agriculture, the Commissioner of Internal Revenue, the Commissioner of Fish and Fisheries, and the Surgeon-Generals of the army, navy, and the marine hospital service.

That, in view of the widespread practice of adulteration and fraudulent representation of drugs and, in greater degree, of foods in the United States, menacing the health and purses of the poorer classes especially, and inflicting enormous losses upon honest producers and dealers, as well as upon consumers; and in view of the further fact, well established by the experience of some years, that the several states are unable by their own police regulations, alone, to protect their citizens from such practice in the commerce between the several states and with foreign countries, the delegates assembled resolved to form a permanent organization and set forth their purposes in the following declaration, to which they ordered their several names and representative relations to be subscribed:

OBJECTS OF THE PURE FOOD AND DRUG CONGRESS

"The object of this Congress is to secure suitable legislation of a national character to prevent the adulteration of food, drinks and drugs, and to secure the enforcement of such laws; to secure and promote uniformity in state legislation and in the rulings of the state departments.

"To create and maintain a high public sentiment upon these important subjects and to uphold and sustain all public officers charged with the enforcement of such regulations.

"To promote a more general intelligence concerning the injury to health and to the business interests of honest producers, manufacturers, dealers and exporters, resulting from food adulteration, and concerning the importance of proper food, pure and properly prepared, to the health of the people.

"And to this end we ask the co operation of every one interested in the promotion of sound public morals and in the protection of the public health."

That, after careful consideration by these delegates, representing the various agricultural, manufacturing, commercial, medical and scientific bodies and the national and state governmental bodies whose names are hereunto subscribed, the following bill was agreed upon as best fitted, under existing conditions, to give

to these several interests the protection they need, so far as commerce in the territories and the District of Columbia, and between the several states and with foreign countries, is concerned.

The enactment of this measure is hereby earnestly urged upon your honorable body.

The Pure Food Congress Bill in the House of Representatives March 15, 1898

Mr. Brosius introduced the following bill; which was referred to the Committee on Interstate and Foreign Commerce and ordered to be printed.

A BILL for preventing the adulteration, misbranding, and imitation of foods, beverages, candies, drugs, and condiments in the District of Columbia, and the territories, and for regulating interstate traffic therein, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purpose of protecting the commerce in food products and drugs between the several states and in the District of Columbia and the territories of the United States and foreign countries the Secretary of Agriculture shall organize in the chemical division of the Department of Agriculture a food, beverage, and drug section, and make necessary rules governing the same to carry out the provisions of this act, under direction of the chief chemist, whose duty it shall be to procure from time to time, under rules and regulations to be prescribed by the Secretary of Agriculture and analyze or cause to be analyzed or examined, microscopically or otherwise, samples of foods, beverages, condiments, and drugs offered for sale in any state, District of Columbia, or territory other than where manufactured, or from a foreign country, provided the same be in original or unbroken packages. The Secretary of Agriculture is hereby authorized to employ such chemists, inspectors, clerks, laborers, and other employees as may be necessary to carry out the provisions of this

act, and to make such publication of the results of examinations, analyses, and so forth, as he may deem proper.

§ 2 That the introduction into any state or territory or the District of Columbia from any other state or territory or the District of Columbia or foreign country of any article of food, drugs, or condiments which is adulterated or misbranded within the meaning of this act is hereby prohibited, and any person who shall ship or deliver for shipment from any state or territory or the District of Columbia or foreign country to any other state or territory or the District of Columbia or to a foreign country, or who shall receive in any state or territory or the District of Columbia from any other state or territory or the District of Columbia or foreign country, or who, having received, shall deliver, for pay or otherwise, or offer to deliver to any other person, in original unbroken packages, any such article so adulterated or misbranded within the meaning of this act, or any person who shall sell or offer for sale in the District of Columbia or the territories of the United States such adulterated, mixed, misbranded, or imitated foods, beverages, condiments, or drugs shall be guilty of a misdemeanor, and for such offense be fined not exceeding two hundred dollars for the first offense and for each subsequent offense not exceeding three hundred dollars, or be imprisoned not exceeding one year, or both in the discretion of the court.

§ 3 That the chief chemist shall make, or cause to be made, under rules and regulations to be prescribed by the Secretary of Agriculture, examinations of specimens of food, beverages, condiments, and drugs offered for sale in original or unbroken packages in any state or territory other than where manufactured or from any foreign country which may be collected from time to time, under rules and regulations to be prescribed by the Secretary of Agriculture, and under his direction, in various parts of the country. If it shall appear from such examination that any of the provisions of this act have been violated the Secretary of Agriculture shall at once certify the facts to the proper

United States district attorney, with a copy of the results of the analysis duly authenticated by the analyst under oath.

§ 4 That it shall be the duty of every district attorney to whom the Secretary of Agriculture shall report any violation of this act to cause proceedings to be commenced and prosecuted without delay for the fines and penalties in such case provided.

DEFINITIONS

§ 5 That the term "drug," as used in this bill, shall include all medicines recognized in the United States Pharmacopœia and National Formulary and cosmetics for internal or external use. The term "food," as used herein, shall include all articles used for food, candy, drink, or condiment by man or domestic animals, whether simple, mixed, or compound. The term "misbranded," as used herein, shall include all drugs, or articles of food, or articles which enter into the composition of food or condiments the package or label of which shall bear any statement purporting to name any ingredients or substances as not being contained in such article, which statement shall be false in any particular; or any condiment or food product which is falsely branded as to the state or territory in which it is manufactured or produced.

ADULTERATIONS

§ 6 That for the purposes of this act an article shall be deemed to be adulterated—

In case of drugs:

First. If, when a drug is sold under or by a name recognized in the United States Pharmacopœia, it differs from the standard of strength, quality, or purity, according to the tests laid down in the United States Pharmacopœia, official at the time of the investigation.

Second. If, when sold under or by a name not recognized in the United States Pharmacopœia, but which is found in the National Formulary, it differs from the standard of strength, quality, or purity, according to the tests laid down in said work.

Third. If its strength or purity fall below the professed standard under which it is sold.

Fourth. If it be an imitation of and sold under the specific name of another article.

In the case of food, candy, or drink:

First. If any substance or substances has or have been mixed and packed with it so as to reduce or lower or injuriously affect its quality or strength, so that such product, when offered for sale, shall deceive or tend to deceive the purchaser.

Second. If any inferior substance or substances has or have been substituted wholly or in part for the article, so that the product, when sold, shall deceive or tend to deceive the purchaser.

Third. If any valuable constituent of the article has been wholly or in part abstracted, so that the product, when sold, shall deceive or tend to deceive the purchaser.

Fourth. If it be an imitation of and sold under the specific name of another article.

Fifth. If it be mixed, colored, powdered, or stained in a manner whereby damage or inferiority is concealed, so that such product, when sold, shall deceive, or tend to deceive the purchaser.

Sixth. If it contain any added poisonous ingredient or any ingredient which may render such article injurious to the health of the person consuming it.

Seventh. If it be labeled or branded so as to deceive or mislead the purchaser, or purport to be a foreign product, when branded so, or is an imitation, either in package or label, of an established proprietary product which has been trade-marked or patented.

Eighth. If it consists of the whole or any part of a diseased, filthy, decomposed, or putrid animal or vegetable substance, or any portion of an animal unfit for food, whether manufactured or not, or if it is the product of a diseased animal, or of an animal that has died otherwise than by slaughter.

Ninth. That candies of domestic manufacture and chocolate of domestic manufacture may be deemed to be adulterated if they contain terra alba, barytes, talc, chrome yellow, or other mineral substances or poisonous colors or flavors, or other ingredients deleterious or detrimental to health; provided, that an article of food, beverage, condiment, or drug which does not contain any added poisonous ingredient shall not be deemed to be adulterated in the following cases: First, in the case of mixtures or compounds which may be now or from time to time hereafter known as articles of food, beverages, or condiments, under their own distinctive names, and not included in definition fourth of this section. Second, in the case of articles labeled, branded, or tagged so as to plainly indicate that they are mixtures, compounds, combinations, imitations, or blends. Third, when any matter or ingredient has been added to the food, beverage, or condiment, because the same is required for the production or preparation thereof as an article of commerce in a state fit for carriage or consumption, and not fraudulently to increase the bulk, weight, or measure of the food, beverage, or condiment, or conceal the inferior quality thereof: Provided, that the same shall be labeled, branded, or tagged, as prescribed by the Secretary of Agriculture, so as to show them to be compounds, and the exact character thereof; and provided further, that nothing in this act shall be construed as requiring or compelling proprietors or manufacturers of proprietary foods to disclose their trade formulas, except in so far as the provisions of this bill may require to secure freedom from adulteration or imitation. Fourth, where the food, beverage, condiment or drug is unavoidably mixed with some harmless extraneous matter in the process of collection or preparation; provided further, that no retailer shall be convicted under the provision of this act when he is able to prove a written guaranty of purity, in a form approved by the Secretary of Agriculture, as published in his rules and regulations, signed by the wholesaler, jobber, manufacturer, or other party from whom he purchased said articles. Said guaranty shall contain the full name and address of the party

or parties making the sale to the retailer, and said party or parties shall be amenable to the prosecutions, fines, and other penalties which would attach in due course to the retailer under the provisions of this act.

§ 7 That the Secretary of Agriculture is hereby authorized to cause all compound, mixed, or blended products to be properly branded and prescribe how this shall be done.

§ 8 That it shall be the duty of the Secretary of Agriculture to call upon the Association of Official Agricultural Chemists, and such physicians, not less than five, as the President of the United States shall select from the Medical Department of the army, the navy, and the United States marine hospital, and five chemists to be selected by the American Chemical Society, to determine jointly the standard of all food products (within the meaning of this act), and when so determined such standards shall guide the chemists of the Department of Agriculture in the performance of the duties imposed upon them by this act, and shall remain the standards before all courts. It shall be the duty of the Association of Official Agricultural Chemists and the medical officers before mentioned to confer with and consult the duly accredited representatives of all industries for which standards shall be established under the provisions of this act.

§ 9 That every person who manufactures for shipment and delivers for transportation from any state, territory, or the District of Columbia, any drug, condiment, beverage, or article of food, and every person who exposes for sale or delivers to a purchaser any drug, condiment, beverage, or article of food received from a state, territory, or the District of Columbia other than the state, territory, or the District of Columbia in which he exposes for sale or delivers such drug, beverage, or article of food, and which article is in the original unbroken package in which the same was received, shall furnish within business hours and upon tender and full payment of the selling price a sample of such drugs, condiments, beverages, or articles of food to any person duly authorized by the Secretary of Agriculture to receive the same, and who shall apply to such manufacturer or vender or

person delivering to a purchaser such drug, beverage, or article of food such sample for such use, in sufficient quantity for the analysis of any such article or articles in his possession. And in the presence of such dealer and an agent of the Department of Agriculture, if so desired by either party, said sample shall be divided into three parts, and each part shall be sealed by the seal of the Department of Agriculture. One part shall be left with the dealer, one delivered to the chemist of the Department of Agriculture, and one deposited with the United States district attorney for the district in which the sample is taken. Said manufacturer or dealer may have the sample left with him analyzed at his own expense, and if the results of said analysis differ from those of the chemist of the Department of Agriculture the sample in the hands of the district attorney shall be analyzed at the expense of the said manufacturer or dealer by a third chemist, who shall be appointed by the president of the Association of Official Agricultural Chemists of the United States, and the analysis shall be conducted in the presence of the chemist of the Department of Agriculture and the chemist representing the dealer, and the whole evidence shall be laid before the court.

§ 10 That any manufacturer or dealer who refuses to comply, upon demand, with the requirements of section nine of this act shall be guilty of a misdemeanor, and upon conviction shall be fined not exceeding one hundred nor less than ten dollars, or imprisoned not exceeding one hundred nor less than thirty days, or both. And any person found guilty of manufacturing, or offering for sale, or selling an adulterated, impure, or misbranded article of food, condiment or drug in violation of the provisions of this act shall be adjudged to pay, in addition to the penalties heretofore provided for, all the necessary costs and expenses incurred in inspecting and analyzing such adulterated articles which said person may have been found guilty of manufacturing, selling or offering for sale.

§ 11 That this act shall not be construed to interfere with com-

merce wholly internal in any state, nor with the exercise of their police power by the several states.

§ 12 That any article of food, condiment or drug that is adulterated within the meaning of this act, and is transported, or is being transported, from one state to another for sale, or if it be sold or offered for sale in the District of Columbia and the territories of the United States, shall be liable to be proceeded against in any district court of the United States, within the district where the same is found, and seized for confiscation, by a process of libel for condemnation. And if such article is condemned as being adulterated, the same shall be disposed of as the said court may direct, and the proceeds thereof, if sold, less the legal costs and charges, shall be paid into the treasury of the United States. The proceedings in such libel cases shall conform as near as may be, to proceedings of admiralty, except that either party may demand trial by jury of any issue of fact joined in such case, and all such proceedings shall be at the suit of and in the name of the United States.

That resolutions favoring a measure upon which the above bill was modelled were passed by the following important bodies:

By the National Grange, Patrons of Husbandry, in November, 1897;

By the Association of Official Agricultural Chemists of the United States on the 29th day of October, 1897

And by the National Farmers' Congress.

The names, residences, and representative relations of your petitioners are hereunto subscribed:

Joseph E. Blackburn, president, dairy and food commissioner, Columbus, Ohio.

Frank Hume, 1st vice-president, wholesale grocer, Washington, D. C.

Alex. J. Wedderburn, corresponding secretary (G), master state grange of Virginia, P. O. box 464, Washington, D. C.

Franklin Dye, recording secretary, Secretary State Board of Agriculture, Trenton, N. J.

Robert N. Harper, treasurer, president District of Columbia Pharmaceutical Association, Washington, D. C.

EXECUTIVE COMMITTEE

William Frear, Ph. D., chemist, State college, Pa., chairman.

W. S. Thompson, pharmacist, Washington, D. C.

W. A. Withers, state chemist, Raleigh, N. C.

T. N. Jamieson, druggist, Chicago, Ill.

Jas. A. Mount, governor, Indianapolis, Ind.

N. J. Batchelder, chairman executive committee National Grange, P. of H., Concord, N. H.

F. J. H. Kracke, assistant commissioner of agriculture, New York, N. Y.

NATIONAL ORGANIZATIONS REPRESENTED

National Confectioners' Association.

National Millers' Association.

Northwestern Millers' Association.

American Chemical Society.

United States Brewers' Association.

Fishing industry.

United States Bee Keepers' Union.

Official agricultural chemists.

National Creamery and Butter Makers' Association.

National Grange P. of H.

Vital Friends.

Women's Christian Temperance Union.

National Pure Food Association.

Medical and Surgical Association.

National Association Dairy and Food Departments.

United States Export Association.

National Wholesale Grocers' Association.

National Retail Grocers' Association.

National Farmers' Congress.

National Bee Keepers' Union.

National Peace Congress.

Governmental departments represented

DEPARTMENT OF AGRICULTURE

J. H. Brigham, assistant secretary.

D. E. Salmon, chief of bureau of animal industry.

H. W. Wiley, chief of division of chemistry.

Henry E. Alvord, chief of dairy division.

W. M. King, statistical division (special cereal inquiry).

Alternates:

Frederick V. Coville, chief of division of botany.

A. D. Melvin, chief of inspection division, B. A. I.

Wm. A. Taylor, assistant chief division of pomology.

INTERNAL REVENUE DEPARTMENT

Mr. Wilson, Internal Revenue Bureau, Washington.

Mr. Bowen, Internal Revenue Bureau, Washington.

J. B. T. Tupper, Internal Revenue Bureau, Washington.

C. A. Bates, Internal Revenue Bureau, Washington.

C. A. Crampton, M. D., Internal Revenue Bureau, Washington.

SURGEON-GENERAL OF THE NAVY

Chas. H. White, U. S. N., medical director in charge of the U. S. N. Museum of Hygiene.

James M. Flint, U. S. N., medical director Smithsonian Institute, the "Portland."

SURGEON-GENERAL OF THE ARMY

Chas. H. Alden, (Col.) Assistant Surgeon General U. S. A., Surgeon General's office, Washington.

Wm. H. Forwood, (Col.) Assistant Surgeon General, U. S. A., attending surgeon, Soldiers' Home, Washington.

Chas. Smart, (Lieut. Col.) Deputy Surgeon General, U. S. A., Surgeon General's office, Washington.

Jas. C. Merrill, (major) chemist, Surgeon General's office, Washington.

W. M. Mew, M. D., chemist, Surgeon General's office, Washington.

MARINE HOSPITAL SERVICE

J. J. Kinyoun, P. Ast. surgeon, M. H. S., Washington, D. C.
Chas. E. Banks, surgeon, M. H. S. Washington.

UNITED STATES FISH COMMISSION

W. de C. Ravenel, Washington.
Lient. Robert Platt, Washington.
B. W. Evermann, Washington.
C. H. Townsend, Washington.
I. H. Dunlap, Washington.

APPOINTMENTS MADE BY THE COMMISSIONERS, DISTRICT OF COLUMBIA

Frank Hume, wholesale grocer, Washington, D. C.
J. D. Hird, chemist, Washington.
R. N. Harper, Pres. D. C. Phar. Asso., Washington.
Beriah Wilkins, editor Post, Washington.
William Tindall, secretary board of commissioners, Washington.
W. C. Woodward, M. D., health officer, Washington.
E. G. Davis, collector, Washington.
Theodore W. Noyes, editor Star, Washington.
Stilson Hutchins, editor Times, Washington.
George H. Harris, secretary board of trade, Washington.
Matthew Trimble, assessor, Washington.
J. F. Oyster, wholesale butter dealer, Washington.
Robert B. Tenney, Washington.
T. J. Mayer, Washington.
James L. Norris, Washington.
George M. Kober, M. D., Washington.
H. F. Blount, (Col.) Washington.
William Saunders, superintendent garden and grounds, Department of Agriculture, Washington.

DISTRICT OF COLUMBIA

H. N. Stokes, M. D., president Washington Chemical Society, geological survey.

T. M. Whitney, cider and vinegar manufacturer, Washington.

M. M. Whitney, cider and vinegar manufacturer, Washington.

Horatio Browning, Wholesale Grocers' Association, Washington.

N. H. Shea, Wholesale Grocers' Association, Washington.

Geo. J. Mueller, confectioner, Washington.

Edward Graves, of Havener's Baking Co., Washington.

Wm. Neuland, hotel and restaurant, Washington.

George N. Acker, M. D., Washington.

W. S. Thompson, American Phar. Asso., Washington.

Chas. E. Munroe, M. D., American Chemical Society, Washington.

W. H. Seaman, M. D., Washington Chemical Society, United States patent office, Washington.

Henry H. Johnston, Washington.

John H. Magruder, retail grocer, Washington.

J. B. C. Custis, M. D., Washington board of trade.

S. L. Hilton, 1033 22d street, president National College of Pharmacy, Washington.

Samuel C. Busey, M. D., Washington board of trade.

W. D. Bigelow, Washington Chemical Society, Department of Agriculture.

L. W. Glazebrook, M. D., 2022 P street, Medical Society, Washington.

G. Wythe Cook, M. D., Medical Society, 3 Thomas Circle, Washington.

Belva Lockwood, Vital Friends and National Peace Congress, Washington.

Frank Madigan, 1206 Va. avenue, S. W., Washington, brewer.

M. Sullivan, Washington, brewer.

Mr. Jarvis, 426 Ninth street, N. W., Washington, candy manufacturer.

J. F. Sheetz, 732 Seventh street, N. W., Washington, candy manufacturer.

W. S. Sammons, 612 Q street, N. W., Washington, chemical manufacturer.

T. S. Grove, Washington, cider manufacturer.

Somerset Waters, Washington, wholesale grocer.

B. B. Earnshaw, Washington, wholesale grocer.

J. C. Ergood, Washington, wholesale grocer.

Thos. J. Mayer, Washington, flour manufacturer.

Ralph L. Galt, Washington, flour manufacturer.

James H. Welsh, of W. M. Galt & Co., Washington.

E. L. Jordan, 519 Ninth street, N. W., president Retail Liquor Dealers' Association.

William Maguire, 1500 Seventh street, N. W., retail liquor dealer.

Wm. Whelan, Washington, retail liquor dealer.

Chr. Xander, Seventh street between I and K, wines and liquors.

F. Pohrdorff, 909 Seventh street, Washington, wines and liquors.

William Muehlison, Washington, wholesale liquor dealer.

Dr. E. A. DeSchweintz, chief chemist, Bureau of Animal Industry, Washington, D. C., Chemical Society.

F. M. Chriswell, 1901 Seventh street, Washington Pharmaceutical Society.

W. G. Duckett, Pa. avenue and 22d street, Washington Pharmacy Society.

John T. Winter, M. D., 719 Mt. Vernon place, Washington pharmacy board.

W. P. Carr, M. D., Washington pharmacy board.

S. L. Hilton, 1033 22d street, College of Pharmacy.

H. C. Easterday, N. J. avenue and G street, Washington, College of Pharmacy.

H. L. Biscoe, Tenth street, wharf, Washington.

Walter Burton, National hotel, Washington.

W. H. Selden, Metropolitan hotel, Washington.

C. M. Souissa, secretary, Washington, Wholesale Grocers' Association.

ALABAMA

J. H. G. Martin, Kellog building, Washington (G).

CALIFORNIA

Wm. M. C. Ramsey, Santa Paula (G).

C. A. Barlow (M. C.), Washington, D. C., California State Alliance.

E. M. Wardell, 513 B street, N. E., Washington, D. C., California State Alliance.

COLORADO

Alex. J. Wedderburn, of Virginia, representing Colorado State Bee Keepers' Association.

CONNECTICUT

J. B. Noble, dairy commissioner, Hartford.

R. O. Eaton, deputy dairy commissioner, New Haven.

Geo. L. McLean, state inspector of factories, Ellington.

J. D. Walter, New Haven county commissioner, Cheshire.

Henry M. Bishop, secretary State Board of Pharmacy, New Haven.

DELAWARE

John T. Almond, manufacturer, Wilmington (G).

Z. James Belt, wholesale and retail druggist, Sixth and Market streets, Wilmington (G).

FLORIDA

Jno. W. Trammel, superintendent State Insane Asylum, Chattahoochee (G).

GEORGIA

E. W. Allen, experiment station.

H. C. White, Athens, president of College of Agriculture, and vice-director of experiment station.

Montgomery Cummings, Washington, D. C., Georgia Dairy-men's Association.

ILLINOIS

H. L. Hampton, retail grocer, Springfield (G).

Albert E. Ebert, Chicago, American Pharmaceutical Association.

Louis Lehman, 1229 N. Halstead street, Chicago, chairman Ill. Phar. Association.

W. Bodemann, Lake avenue and 50th street, Chicago Apothecaries' Club.

J. A. Egan, M. D., Springfield, secretary State Board of Health.

H. H. Green, pharmacist, Bloomington (G).

Fred M. Schmidt, Schiller building, Chicago, president board of pharmacy.

T. N. Jamieson, druggist, Chicago (G).

P. H. Eisenmayer, Murphysboro, So. Ill. Milling Company.

Miss Emma C. Sickels, 2039 Wabash avenue, Chicago, chairman domestic science committee, National Farmers' Congress.

F. C. Johnson, Kishwaukee, cider and vinegar manufacturer (G).

T. W. Ruekheim, Chicago, manufacturing confectioner.

IDAHO

Robert Mulleken, secretary Horticultural Society, Nampa.

INDIANA

Aaron Jones, master of National and State Grange, South Bend (G).

W. J. Fairfield, M. D., secretary board of health, representing Commercial Club, Anderson.

IOWA

Eugene Secor, general manager and treasurer United States Bee Keepers' Union, Forest City.

KANSAS

Thos. Ryan, assistant secretary of interior, Washington, D. C., Commercial Club of Topeka.

KENTUCKY

R. B. Gilbert, M. D., Medical Society, Louisville.

R. W. Taylor, M. D., Medical Society, Louisville.

MARYLAND

Adam J. Gosman, M. D., druggist and manufacturer, 346 N. Charles street, Baltimore (G).

Chas. E. Coffin, manufacturer and farmer, Muirkirk (G).

H. B. McDonnell, M. D., College Park, state chemist.

D. M. Nesbit, College Park (G).

Albert E. Thompson, druggist, 101 N. Charles street, Baltimore (G).

Chas. Caspari, Baltimore, secretary American Pharmaceutical Association (G).

H. J. Patterson, College Park, A. and M. college and experiment station.

Jordan Stabler, corner Madison and Eutaw streets, Baltimore (G).

G. W. Lehman, Ph. D., Baltimore, chemist, board of health.

E. G. Welch, M. D., College Park, agricultural college and experiment station.

Jos. B. Ager, Hyattsville, master State Grange, rep. National Grange.

J. Enos Ray, Chillium, lecturer State Grange.

Wm. B. Sands, Baltimore, secretary State Grange.

Wm. S. Powell, manufacturer and farmer, Baltimore (G).

Chas. E. Dohme, Baltimore, American Pharmaceutical Association.

Geo. G. McGaw, N. Charles street, Baltimore (G).

R. W. Sylvester, president A. and M. C., College Park (G).

E. H. Brinkley, College Park, experiment station.

MASSACHUSETTS

Hiram H. Logan, 202 State street, Boston, Boston Wholesale Grocers' Association (G).

H. D. Perky, 57 Jackson street, Worcester (G).

W. C. Jewitt, Worcester, master, State Grange.

A. C. Dowse, editor N. E. grocer, Boston (G).

A. F. Carpenter, Somerville, ex-president Retail Grocers' Association (G).

Walter M. Lowney, Boston, National Confectioners' and N. E. Confectioners' Association.

Marion A. McBride, 316 Bigelow street, Cambridge, National W. C. T. U., domestic science branch.

Jas. H. Wright, Boston, Boston Retail Grocers' Association.

Jas. Morrison, Boston, Boston Retail Grocers' Association.

Geo. O. Robinson, Boston.

O. Elliott Smith, Boston.

John Connor, Boston.

G. L. Grave, Boston.

Arthur W. Brigham, Boston.

Henry H. Goodell, Amherst, president State Agricultural college and director experiment station.

MICHIGAN

E. O. Grosvenor, 1207 Majestic building, Detroit, dairy and food commissioner.

Henry W. Campbell, box 431, Capitol, Washington, D. C.

Frank Benton, assistant entomologist, United States Department of Agriculture, Rep. National Bee Keepers' Union and Utah State Bee Keepers' Association.

MISSOURI

August J. Walter, manufacturing confectioner, St. Louis, chairman legislative committee, National Confectioners' Association.

Emerson T. Abbott, St. Joseph, U. S. Bee Keepers' Union.

Augustine Gallagher, editor Modern Miller, St. Louis, secretary N. W. Millers' Association.

Chas. C. Bell, Boonville, horticulturist.

MINNESOTA

Marcus Johnston, St. Paul, N. W. Flour Millers' Association.

Loren Fletcher (M. C.), Minneapolis board of trade.

NEW YORK

F. E. Dawley, Fayetteville, director State Farmers' Institutes.

F. M. Barrett, editor American Grocer, New York city.

Robert G. Eccles, 191 Dean street, Brooklyn borough, New York city, county of Kings Medical Society.

Gallus Thomann, 109-111 E. 15th street, New York, manager literary bureau, U. S. Brewers' Association.

Capt. S. A. Day, U. S. A., Fort Slocum.

G. L. Flanders, Albany, assistant commissioner of agriculture.

Wm. McMurtrie, M. D., 100 William street, New York, American Chemical Society.

F. J. H. Kracke, New York city, assistant commissioner of agriculture, Rep. Mercantile exchange.

E. A. Day, M. D., 659 Putnam avenue, Brooklyn borough, New York city, Rep. county of Kings Medical Society.

Francis B. Thurber, New York city, president U. S. Export Association.

C. E. Jennings, editor Fishing Gazette, 203 Broadway, New York.

S. Brown Richardson, Lewisville, secretary State Dairy Association.

Arthur Abowst, Brooklyn, president State Cider and Vinegar Makers' Association.

Daniel Lewis, M. D., 252 Madison avenue, New York, president State Board of Health.

E. J. Wheeler, M. D., Albany, chief chemist, Department of Agriculture.

NEW JERSEY

Franklin Dye, Trenton, secretary State Board of Agriculture.

Paul V. Flynn, editor N. J. Trade Review, 43 Park street, Newark (G).

D. D. Denise, Freehold, president N. J. State Board of Agriculture.

Edward A. Sayre, manufacturing chemist, 100 Henry street, Orange (G).

R. B. Davis, Glen Ridge, manufacturer of food products (G).

H. S. Scull, M. D., Atlantic City, secretary board of health.

W. F. Koeheke, Atlantic City, board of health.

F. N. Barrett, editor N. Y. Grocer, 143 Chambers street, New York city (G).

E. B. Voorhees, New Brunswick, director agricultural experiment station.

NORTH CAROLINA

Jas. B. Lloyd, Tarboro, Farmers' Alliance.

W. A. Withers, Raleigh, chemist and director agricultural experiment station.

J. L. Ramsey, Raleigh, secretary board of agriculture.

J. C. L. Harris, Raleigh, president board of trustees, A. and M. college.

Burdis Anderson, retail merchant, Hub.

Geo. S. Fraps, Raleigh, State Horticultural Society.

R. H. Lewis, M. D., Raleigh, secretary board of health.

A. Q. Holliday, Raleigh, president A. and M. college.

NEW HAMPSHIRE

N. J. Bachelder, Concord, master State Grange, chairman Ex. Com. of National Grange, P. of H.

Wm. J. Reid, Parkhill (G).

OREGON

Edmund Gilter, Salem (G).

Jas. B. Montgomery, Portland (G).

OHIO

Orrin Thacker, secretary Wholesale Grocers' Asso., Columbus.

F. W. Herbst, drug inspector of food and drug commissioner, Columbus.

J. E. Blackburn, dairy and food commissioner, Columbus, and president of N. A. dairy and food departments.

J. H. Beal, Ohio State Phar. Association, Scio.

J. A. Miller, secretary Ohio Brewers' Association, Cincinnati.

D. L. Sleeper, chief counsel to dairy and food commissioner, Columbus.

OKLAHOMA

D. F. Flynn, Guthrie (G).

William Grimes, Kingfisher (G).

PENNSYLVANIA

John McClurg, Pittsburg, manufacturing confectioner.

Crosby Gray, Pittsburg, superintendent bureau of health.

A. H. Edwards, Pittsburg, meat, milk and food inspector.

Frank Moore, North Orwell, State Grange.

Frank P. Hendley, 117 Callowhill street, Philadelphia, wholesale grocer.

Hon. Thos. J. Edge, Harrisburg, secretary of agriculture (G).

John Hamilton, Harrisburg, deputy commissioner of agriculture.

A. S. Deeter, 144 Pa. street, president Retail Grocers Association, Reading.

Albert Kaiser, 1653 Passayunk avenue, Philadelphia, Retail Grocers' Association.

D. S. Kriebble, grocer, Germantown, Philadelphia.

O. H. Henry, grocer, Germantown, Philadelphia.

P. McGinity, Philadelphia.

Joseph H. Scott, Philadelphia.

Leonard Rhone, Centre Hall, Master State Grange (G).

Edward Hart, editor, Journal American Chemical Society, Easton.

Wm. Frear, Ph. D., State College Chemist Department of Agriculture

Will B. Powell, importer and breeder of blooded stock, Shade-land.

Mrs. E. S. Starr, dairy editor, Public Ledger, Philadelphia, ap. by dairy and food commissioner.

Wm. R. Warner, 1228 Market street, Philadelphia, proprietary manufacturer.

M. N. Kline, pharmacist, Philadelphia board of trade.

Thomas Martindale, retail grocer, 941 Market street, Philadelphia.

John F. Patton, York, American Pharmaceutical Association.

E. A. Cornell, Williamsport, State Board of Pharmacy.

Louis Emanuel, pharmacist, 177 Second avenue, Pittsburg.

Chas. T. George, M. D., Harrisburg, State Board of Pharmacy.

Felix A. Boericke, pharmacist, 1011 Arch street, Philadelphia.

Henry C. Porter, Towanda, State Board of Pharmacy.

Robert P. Duff, Pittsburg, Chamber of Commerce.

Jas. H. McGrath, 1009 Oxford street, Philadelphia, Philadelphia Retail Grocers' Association.

Jason Sexton, Spring House, farmer (G).

Levi Wells, Harrisburg, dairy and food commissioner.

Louis Burk, 1214 North Third street, Philadelphia, pork packers.

Geo. C. Hutchinson, Warriors Mark, National Association Dairy and Food Departments of the United States.

C. B. Tappan, Philadelphia Retail Grocers' Association.

Geo. C. Groff, M. D., Lewisburg, State Board of Health (G).

Jos. P. Remington, Philadelphia, College of Pharmacy (G).

Jacob H. Redsecker, Lebanon Pharmaceutical Association.

SOUTH CAROLINA

A. C. Latimer, Washington, D. C.

UTAH

Frank Benton, Department of Agriculture, Washington, D. C., rep. Utah State Bee Keepers' Association.

VIRGINIA

C. C. Mercer, Hamilton, Agriculturalist (G).

J. A. Jefferies, Warrenton, druggist (G).

John Thompson Brown, Bedford, Board of Visitors, A. and M. College.

J. W. Walter, University of Virginia, professor of chemistry.

Arthur Jordan, M. D., Richmond Academy of Medicine and Surgery (G).

J. W. Henson, M. D., (G).

Richard H. Gaines, Richmond, State Chemist Department of Agriculture.

Geo. F. Harrison, farmer, Chantilla (G).

Capt. H. L. Salsbury, Merrifield, State Grange.

Samuel H. Lunt, Alexandria (G).

Wm. M. King, Glencarlyn, Agricultural Department.

Alex. J. Wedderburn, Fairfax Co. (G), Master State Grange, and rep. Colorado Bee Keepers' Association.

E. F. Golsen, Somerset (G).

M. E. Church, Falls Church, State Pharmaceutical Association.

O. E. Hine, Vienna, State Board of Agriculture.

Prof. Mallett, Charlottesville, American Pharmaceutical Society.

F. Ashby Miller, Richmond, American Pharmaceutical Association and Virginia Pharmaceutical Association.

WISCONSIN

A. H. Hollister, Madison, State Board of Pharmacy.

Jessie Birmingham, Abrams (G).

William Larsen, proprietor Wm. Larsen's Canning Co., Green Bay, (G).

U. O. B. Wingate, M. D., Secretary Board of Health, Milwaukee.

F. Barry, Secretary Millers' National Association, Milwaukee.

WEST VIRGINIA

John H. Ruhl, Clarksburg (G).

L. L. Loar, retail grocer, Grafton (G).

John H. Grimm, druggist, Parksburg (G).

I. W. Gall, Treasury Department, Washington, D. C. (G).

LOCAL ADVISORY COMMITTEE

Frank Hume, chairman, wholesale grocer, Washington, D. C.

Matthew Trimble, 1st vice-chairman, assessor of D. C.

Wm. C. Woodward, 2nd vice-chairman, health officer.

R. N. Harper, treasurer, president D. C. Pharmaceutical Association.

J. D. Hird, chemist of District of Columbia.

Beriah Wilkins, editor Washington Post.

J. F. Oyster, wholesale butter dealer.

Alex. J. Wedderburn, secretary.

ACTION BY EXECUTIVE COMMITTEE

The executive committee of the National Pure Food and Drug Congress met in the city of Washington on the 21st day of March, 1898, and directed that the foregoing memorial be sent to the Congress of the United States.

WM. FREAR,

Chairman

FRANKLIN DYE,

Secretary

ACTION OF THE NATIONAL GRANGE, P. OF H.

Farmers have been greatly benefited by state legislation in the interest of pure food, but there seems to be need of a national law upon this important subject. It is suggested that the farmers insist upon the rigid enforcement of the oleomargarine law, as there is good reason to believe that some United States officials are careless in its enforcement, or in sympathy with the violators of this law.—Master's annual address.

RESOLUTION ADOPTED

Whereas, No more important subject presents itself for consideration than the adulteration of drug and food products, and the extent of food adulteration is so general and so widespread in its evil effects that it is costing the people millions of dollars every year; it is demoralizing honest business, upsetting legitimate trade, and invading the homes of America in every section, and its effects upon the health of the nation are such as to steadily undermine its life and strength; therefore be it

Resolved, That the National Grange, Patrons of Husbandry, in thirty-first annual session assembled, hereby reaffirms its previous position on this subject, and demands of Congress the passage

of laws to prevent the inter-state traffic in adulterated and misbranded food and drug products.

Resolved, That the legislative committee of the National Grange, when appointed, be, and is hereby, directed to send petitions to every subordinate grange in the United States, urging upon Congress the adoption of a pure food and drug law, to be signed and returned by them to Congress.

Resolved, That our national legislative committee be directed to present these resolutions to each senator and member of Congress, and use every legitimate means to secure the passage of remedial laws, and they are hereby authorized to co-operate with other associations to secure a like end, in such manner as may appear best to them.

Resolutions similar in character to the above were also adopted by the Association of Official Agricultural Chemists and the National Farmers' Congress at their last annual session, and by many state granges and other representative bodies.

BILLS IN BOTH SENATE AND HOUSE

The above bill was also presented to the Senate by Hon. Chas. J. Faulkner of West Virginia, as Senate No. 4144, and referred to the Senate committee on agriculture and forestry. In the House it is H. R., 9154 and was referred to the committee on interstate and foreign commerce of which Hon. Wm. P. Hepburn is chairman.

N. B.—(G) in brackets after name indicates appointment by governor of the state.

AMERICAN PUBLIC HEALTH ASSOCIATION. REPORT OF F. C. CURTIS, M. D., AS A DELEGATE TO CONVENTION.

ALBANY, October 1, 1898

To the State Board of Health:

Gentlemen—At the meeting of the American Public Health Association at Ottawa numerous subjects of common interest were brought forward and discussed. My especial interest was in the subject of the Bertillon classification of causes of death and its

adoption as a common medium for the reports of vital statistics by all boards of health; it was reported on favorably by a committee and without discussion was adopted and recommended for universal use.

I expressed at length to the leaders in promoting it, my own criticisms and objections to details of this system of classification. Agreeing fully with their purpose of finding one common plan for classifying the causes of deaths for all boards of health to follow in their published reports throughout the world, there ought to be made some amendments to it I think before it may be adopted by this Board, and it is possible to make these without changing its general plan.

To enumerate some of these: Epidemic Cerebro-spinal meningitis is placed under local diseases of the nervous system; it should be noted separately and as a zymotic disease, in this state at least, where we are collecting a mass of data as to its distribution.

Diarrheas and dysentery are, likewise, put under local diseases of the digestive system. Erysipelas is put under a needless class of diseases of the skin, where also is placed gangrene without specifying the cause.

Diseases of the nervous system includes convulsions of infants, independent of cause, and the same class includes diseases of the eyes and ears.

Chronic bronchitis and asthma are allowed in the class of respiratory diseases and weakens the value of a class which should be composed of acute diseases.

There is a class of genito-urinary diseases, instead of a simple class of diseases of the urinary organs distinct from such unrelated causes as may occur from diseases of the generative organs.

These more conspicuous subjects for criticism suggest the need of revision of the details of the proposed classification before its universal use is entered on. I brought them to the attention of the promoters of the system and they were accepted by them as worthy of consideration. It is not proposed to enter upon the general use of this classification until the year 1900, and it is promised

that opportunity will be given for full criticism and revision by all before final adoption.

I hope that the New York State Board of Health, which representing so large a mass of statistical material they are much interested to secure the co-operation of, will avail itself of the opportunity when presented of making such criticisms as will bring the system into accord with what is rational and with its own collating matter accumulating now for some fifteen years. The ultimate adoption of some universal system of classifying causes of death is beyond doubt desirable.

The meeting of the Association was one of customary interest and importance, and it appears to me well worthy of the attention of the Board as a yearly forum for interchange of accumulated information and for securing attention to common interests. A number of the states and provinces were represented in it by delegate attendance at its meetings.

Very respectfully,

F. C. CURTIS

EXAMINATION OF SAMPLE OF CHEESE

ELMIRA, *June 29, 1898*

DR. BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

Dear Doctor—On or about June 30th, E. VanOrsdall & Co., 1201 Grand Central avenue, this city, received a consignment of 20 cheeses, more or less, to sell upon commission, from C. S. Putnam, who has factories at Sugar Hill, Schuyler county, and Reviff, Tioga county, this state.

One of the cheeses from the above named consignment found its way to the store of Jacob Miller at 721 East Clinton street, who in turn retailed a portion of the same to his customers. In four families where it found its way the members who ate of this cheese, probably a dozen or more individuals, were shortly afterward seized with vomiting and purging, prostration and symptoms suggestive of ptomaine poisoning. None of the cases proved fatal. Miller, upon hearing of the facts of the cases, immediately returned what

was left of the cheese to VanOrsdall & Co., at whose store it was found yesterday afternoon and destroyed by an inspector of this board. The inspector reported to me as follows: "Cheese destroyed at VanOrsdall's, corner of Grand Central avenue and Division street. State stamp full cream cheese, factory, No. 1976. Outside of box-shipping tag, from C. S. Putnam. Sugar Hill, N. Y., Reniff, N. Y. I herewith enclose shipping tag alluded to.

J. J. Reardon, of 381 West Second street, purchased a cheese from VanOrsdall & Co., consigned to the latter by C. S. Putnam, and received by VanOrsdall & Co., at the same time as was the cheese sold Miller and to which reference has been had. Two families, to whom Reardon sold of this cheese were taken ill as was also Reardon himself, the symptoms as I have heard them related corresponding closely with those occurring in the families first alluded to. Reardon, likewise returned the balance of the cheese to VanOrsdall & Co., who held it and balance of consignment awaiting instructions from consignor.

I have instructed VanOrsdall & Co. not to sell any more of this cheese and further directed them to hold the Reardon cheese pending instructions—thinking you might desire to submit it to the chemist of the State Board of Health in connection with such inquiries and investigation as may seem to you proper in connection with the consignment of which it is a part, and also as to conditions obtaining at the factory where it was made. I am informed the cheese was made at Reniff.

The attached newspaper clipping is taken from the *Elmira Gazette and Free Press* of this date. I have not yet verified the alleged facts or whether any cheese was sent from here to members of Company L, Third Regiment, New York Volunteers.

Awaiting a reply, I remain,

Very respectfully,

H. D. WEY,

Health officer

-It Made Them Ill —Elmirans at Camp Alger Poisoned by Cheese

The Buffalo *Express* to-day in an article dated from Camp Alger yesterday says:

The Third New York Volunteer Infantry regimental surgeons had their hands full last night caring for members of Company L, of Elmira. The men were poisoned by eating cheese which had been sent them from home. Hardly half of the company escaped the ill effects of the stuff. Those affected were made deadly sick at their stomach and suffered intense pain. The doctors administered emetics and other treatment and by 9 o'clock this morning all were considered out of danger, although three recruits are still quite seriously sick.

ALBANY, *July 1, 1898*

H. D. WEY, M. D., *Health officer, Elmira, N. Y.:*

Dear Sir—In the absence of Secretary Smelzer from the city, I have the honor to acknowledge the receipt of your communication of the 29th ultimo, reporting the sickness of several persons, caused by the eating of cheese manufactured by C. S. Putnam, Sugar Hill, N. Y.

In reply it is requested that you procure from Van Orsdall & Co. for bacteriological examination by this Board, two samples of the cheese sold to J. J. Reardon and returned to them by him.

We have notified the State Department of Agriculture of the facts in the case, and they will order an examination of the factory of C. S. Putnam.

Very respectfully,

T. A. STUART,

Assistant secretary

ELMIRA, N. Y., *July 2, 1898*

T. A. STUART, *Assistant secretary, State Board of Health, Albany, N. Y.:*

Dear Sir—I am in receipt of your favor of the 1st inst. In response thereto I will send to your Board for transmission to

your bacteriologist two samples of the cheese sold J. J. Reardon and returned by him to Van Orsdall & Co.

Samples will be shipped from here on the 4th inst. so as to be in Albany on the morning of the 5th.

Yours truly,

H. D. WEY,

Health officer

ALBANY, July 7, 1898

H. D. WEY, M. D., *Health officer, Elmira, N. Y.:*

Dear Sir—Your communication of the 2nd instant was received on the 5th and the samples of cheese sent by you arrived this day.

I have sent one sample of the cheese to the Bender laboratory for bacteriological examination, the other sample will be examined by the State Department of Agriculture.

When reports are received in both cases, copies will be sent to you with such instructions as are deemed to be necessary.

Very respectfully,

BAXTER T. SMELZER,

Secretary

ALBANY, July 7, 1898

Prof. GEO. BLUMER, *Director, Bender hygienic laboratory, Albany, N. Y.:*

Dear Sir—I send to you by bearer a sample of cheese made by C. S. Putnam of Sugar Hill, N. Y., and received from Dr. H. D. Wey, health officer of the city of Elmira, and also enclose copy of a letter received from Dr. Wey in which he states that those who ate of the cheese were seized with vomiting and purging, prostration and symptoms of ptomaine poisoning.

You are requested to make a bacteriological examination of the sample sent to you and to report the result to this Board.

Very respectfully,

BAXTER T. SMELZER,

Secretary

BENDER HYGIENIC LABORATORY

ALBANY, N. Y., *September 22, 1898*

Dr. BAXTER T. SMELZER, *Secretary State Board of Health, Albany, N. Y.:*

Dear Sir—I have the honor to submit to you herewith the result of our investigation into a sample of cheese sent to us about two months ago and supposed, at that time, to be responsible for symptoms of tyrotoxicon poisoning in those who had eaten of the cheese.

The specimen submitted was subjected to a bacteriological examination and our results are interpreted only from the standpoint of the biologist. No attempt was made to ascertain the chemical constituents present or determine their toxicity for animal tissues.

Without detailing the technical steps of our investigation I will state that I succeeded in isolating a characteristic and special micro-organism, associated with a few colonies of the *Staphylococcus pyogenes albus*. The organism in question was a short, moderately thick bacillus, varying somewhat in its morphologic aspects in different media. The bacillus was cultivated under both aerobic and anaerobic conditions, but judging from our limited attempts, it prospered better not only as regards growth activity, but also in luxuriant abundance when submitted to the conditions of anaerobic cultivation. The thermic influences upon the growth of the organism were not ascertained, nor the minimum or maximum temperature for its artificial cultivation determined for reasons to be explained later. The mobility is well observed in hanging-drop preparations from the water of condensation in the agar culture, or in young bouillon cultures.

On *agar-agar slant* the growth is moderately profuse, moist and yellowish white in color; on *potato* a similarly colored, but less profuse growth. Cultures in *litmus milk* produce acidification and precipitation of the case in 24 to 48 hours.

Gelatine stab—Yellowish white growth along inoculation tract. No liquefaction of medium.

Bouillon—Uniform turbidity in 36 hours.

Dunham—Uniform turbidity in indol reaction.

Glucose agar—Abundant gas formation.

Lactose agar—Scanty gas formation.

Saccharose agar—Scanty gas formation.

Pathogenesis—The inoculations were made in some cases intraperitoneally and in some others intravenously. Thirty-six to sixty hour bouillon cultures inoculated intraabdominally in doses varying from .5 cc. to 1 cc. usually killed guinea-pigs in from 24 to 70 hours. Rabbits required doses varying from 1 to 3 cc. Intravenous inoculations required smaller doses and produced the fatal effect in much less time.

An interesting point in regard to the inoculation tests is the fact that in a general way the older the culture the more rapidly fatal its effects. This points to the probable elaboration of some extremely toxic product by the bacilli. The organism recovered from the inoculated animals after death, curiously, had lost its pathogenic properties entirely or very largely so.

This is as much as I was able to ascertain regarding the organism from our experiments. Further experimentation would have been most desirable, but in this we were prevented, unfortunately, by our inability to continue the cultivation of the cultures at hand. Many methods were resorted to but their futility was only too obvious.

With this data at hand, it seems reasonable to infer that the organism isolated was the causative factor in the production of the symptoms of poisoning in those individuals who ate of the cheese. The animal inoculations in this connection are most suggestive and almost conclusive, although in some respects not able to withstand the vigorous skeptical attitude of scientific criticism. In this connection it might prove interesting to state that Prof. Victor C. Vaughan, of Ann Arbor, Michigan, in similar researches to the present one, similarly succeeded in isolating an organism from some specimens of poisonous cheese, and which in many respects, was quite similar to the one isolated from the specimen the subject of this investigation.

In conclusion it may be well to state that there exists a striking similarity in the morphologic appearances and the cultural behavior to the bacillus coli communis: Pathogenically considered, however, the organisms respond in a very dissimilar manner, which leads me to believe that this organism is not the same as the colon bacillus.

Very respectfully,

AUGUST JEROME LARTIGAU

SUPPRESSION OF TUBERCULOSIS

Report of the Tuberculosis Committee of the New York State Board of Health

700 SOUTH WEST STREET, SYRACUSE, N. Y., *January 23, 1898*
To the State Board of Health:

The tuberculosis committee respectfully reports for the month ending January 23, 1898, an unusual number of tuberculous cattle and infected herds have been reported to us during the past month. Also an unusual number of requests for inspection, and the application of the tuberculin test, have been received.

The fruit of our educational work is plainly seen in the better and growing appreciation by cattle men of the nature and danger of tuberculosis, as shown by the more frequent reports of the disease, and the constantly increasing number of applications for the tuberculin test by men who know that we have no funds with which to indemnify them for cattle condemned.

We have just received from two large dairymen, requests to test their herds, in which they agree to waive the matter of indemnity and destroy at their own expense, any cattle shown by the tuberculin test to be diseased.

During the month we have tuberculin tested 97 head of cattle, and condemned 72. All those condemned were promptly slaughtered and their carcasses rendered. The stables in which these cattle were kept have been thoroughly scrubbed and whitewashed with antiseptic solutions. Many of these cattle were so badly diseased that tuberculosis was plainly shown by physical signs, and as they all belonged to an estate and were likely to be sold, it was thought best to test them before completing the inspection of all state herds. They were without an exception Jerseys.

Respectfully submitted,

S. CASE JONES, M. D.,

F. W. SMITH, M. D.,

Tuberculosis committee

SYRACUSE, N. Y., *February 28, 1898*

To the State Board of Health:

The tuberculosis committee respectfully report for the month ending February 23rd: About 45 letters have been received, and 45 letters written, and as many circulars of instruction mailed to cattle owners asking for information regarding tuberculosis.

Two herds comprising 23 head have been tuberculin tested. One herd of eight were all found badly diseased and promptly slaughtered. A large number of dairy men were present when this herd was slaughtered, and the evidences of disease were so apparent that expressions of satisfaction and approval at the course pursued were freely made by all. It will be remembered that only a month ago 72 out of a herd of 110 were slaughtered. Such object lessons are most powerful factors for good in this important work.

Respectfully submitted,

S. CASE JONES, M. D.,

F. W. SMITH, M. D.,

Tuberculosis committee

SYRACUSE, N. Y., *March 23, 1898*

To the State Board of Health:

The tuberculosis committee respectfully reports for the month ending March 23rd: During the past month there have been several diseased herds reported, and many urgent requests for the application of the tuberculin test to suspected herds but, as usual, owing to lack of funds we have only been able to give aid to a few of the most urgent demands.

Sixty-eight head have been examined during the month, and four only, found diseased. There has also been reported to us the tuberculous disease of a herd of 22 head of swine, the supposed cause of the disease being given as the feeding from the products of tuberculous cattle.

Since July last, we have directed the examination and tuberculin test of 508 head of cattle, and condemned and slaughtered 81 head. To accomplish this work we have spent \$379.

From the report of Dr. Curtis on the Gray herd of Elmira, sub-

mitted to the committee, we quote some extracts to prove the source of infection of young cattle to be in the food, which was skim milk fed the young calves from the general herd.

"In studying this chart it will be seen that there are three regions affected: throat, thorax and abdomen. The throat is at the entrance of the other two and may have become infected when either of the two have been. The infection of the abdomen is usually shown to be through the food. The infection of the abdomen sometimes occurs however, from the reverse progression of the germs from the thoracic cavity through the diaphragm into the abdominal cavity.

"The abdominal and thoracic infection of the young cattle in this herd is shown by the charts in a striking manner. The cattle may be divided into two classes; those from three years old upward, and those under three.

"Examination of the 48 head of older stock indicates mainly thoracic infection, but one alone, had infection of the abdomen only. Twenty show slight infection of the throat glands and abdominal organs. Nine were infected in the throat. Abdominal infection occurred in 16 cases, in 11 of these the infection was associated with lung infection, and in eight there may have been auto-infection from lung abscesses discharging into the bronchii, yet a comparison of the lesions in some of the eight did not indicate that all of the abdominal lesions were secondary to lung infection. In nine head the post mortem indicated that the abdominal infection was not auto-infection, but due to contaminated food.

"Tubercular abscesses of the lungs were found in 14 cases of the 48 or 23 times in 72 killed, nearly 32 per cent. Five head were infected in the abdomen in the absence of lung lesions. The abdominal infection may have been due in the adult cattle to the eating of food contaminated by germs coming from the lungs of the other cattle.

"The examination of the young cattle shows a remarkable throat, thorax and abdominal infection. Of the 24 head examined, but one was found without visible lesion, two were dying,

one being at the point of death, and others were at all stages between. Nine were yearlings, ten were called two-year-olds, five were called three-year-olds. It is quite likely that the three-year-olds were coming three, as in two which were examined particularly, but one pair of teeth had been cut.

“Among the two-year-olds but one was slightly affected in the bronchial glands alone, the others were quite severely infected and most of them with generalized infection. The nine yearlings condemned were less infected, but one showing no lesions on post mortem.

“The method of infection of these young cattle is of the greatest interest since it has direct relation to the problem of milk infection. In the first place, the lesions found in the abdominal organs were either more advanced, or fully as advanced, as those in the thorax, or throat. Secondly, the disease seemed to have started in a large number of centers at once, no center of disease in a given animal being much larger than another. This uniformity of size of lesions was very noticeable. Among the 23 head infected, two were infected in the abdomen alone, two others in the throat and abdominal organs, and one in the thoracic glands, mesenteric glands and mediastinal glands. The infection of two in the mesenteric, bronchial and posterior mediastinal glands, evidently through food infection primarily, is instructive. The large lesions are those of the mesenteric and mediastinal, while the throat and bronchial lesions are smaller, perhaps secondary. The lesions in one instance are less pronounced than those of another. One animal showed only the posterior mediastinal glands infected. These form a series, or chain of uniform balls one and one-half inches in diameter; while the condition might proceed from lung infection, the variety of the multiple infection occurring in the older cattle indicates that this condition in the yearlings probably proceeded from food infection, all the glands being infected about the same time.

“In considering the source of food infection and the vehicle of the germs, the history of the care of the young cattle and their

dams must be taken into account. All the calves were taken to the creamery farm a day or two after birth, and kept in box stalls until weaned from milk. This may be for six months. The only difference in the care of the calves from the cows in the first six months is in the feeding. They are fed from the skim milk from all the dairy. This milk is separated and then fed from a common receptacle to the calves. When the calves are weaned they are separated from the barns, turned on to the pasture, and not further exposed to contagion except from themselves.

“The thorough infection of the mesenteric glands occurring in so many of these, was through infected milk. That this infection was more severe when the two-year-olds and yearlings were calves, than when the three-year-olds, is readily seen upon consulting the record of those calves. Calves which were almost yearlings had been subjected to nearly the same stable treatment as the diseased cattle, yet did not react, nor probably had disease. Four suckling calves slaughtered, showed no evidences of disease. The explanation of this difference is that during the time that the diseased young stock were taking milk, some cow or cows were giving tubercle bacilli also into their milk. This cow, or these cows, died later, or else ceased to contaminate their milk, and the young healthy stock grew up free from disease.

“The probability of milk infection, and the facts leading to the presumption that dairy stock has been infected by such means, has, in my opinion, been too often passed by and the danger made too little of by those who are steadily apologizing for tuberculous cattle.

“These conditions alone should stimulate every lover of finely bred cattle, and each promoter of sanitary matters, to urge forward the inspection of tuberculous cattle.”

Respectfully submitted,

S. CASE JONES, M. D.,

F. W. SMITH, M. D.,

Tuberculosis committee

SYRACUSE, N. Y., April 23, 1898

To the State Board of Health:

The tuberculosis committee respectfully reports for the month ending April 23, 1898, the tuberculin test of 25 head of cattle, two of them were found tuberculous.

Twenty-six head of swine, the property of John S. Shoemaker, of Niverville, Columbia county, N. Y., having been reported to this committee as badly diseased, and the town authorities urging us to take the matter in charge, we directed Dr. Cooper Curtice to investigate the cause of the outbreak. He found nearly all the swine tuberculous by physical examination, and reported them as a nuisance upon the farm and a menace to the public health through food products for which they were evidently raised.

On April 12th, they were destroyed under the direction of veterinary H. B. Ambler, and careful autopsies were made, which showed extensive tubercular lesions in nearly every animal.

They also reported that Mr. Shoemaker runs a slaughter house, at which he slaughters an inferior class of beef cattle, the offal from which he feeds to his swine. They also report that Mr. Shoemaker stated that he had frequently seen lesions of tuberculosis in the cattle he had slaughtered, and that he readily recognized the tuberculous lesions of the swine as similar to those he had frequently seen in his beef cattle, the offal from which he had fed to his swine.

Accompanying this is a comprehensive report of Dr. Ambler, of the individual autopsies of the herd; a study of which is both interesting and instructive. It will be noticed that the older hogs were most diseased, also that the four-week-old sucklings, Nos. 20, 21, 22 and 23, of the two-year-old tuberculous sow, No. 14, were all badly diseased, strong presumptive evidence of milk infection from their mother.

No. 11 had only been in the place for six months and was not tuberculous, neither were her four-week-old pigs, Nos. 24, 25 and 26, fed and kept under the same circumstances as No. 14 and her pigs.

It will also be noted that the pigs Nos. 15, 16, 17 and 18, of the yearling sow, No. 12, were all diseased, also indicating milk infection from their mother.

Dr. Curtice says in his report, that "there can be no better evidence, short of actually seeing the man feed tuberculous offal, that he infected them by feeding such offal, that he knew the disease in cattle is evidenced by his own statements. The fact is, that he slaughtered what is known as 'bologna,' or 'band box,' stock, a class of cattle that yield a large percentage of tuberculous animals. The fault with Mr. Shoemaker seems not to have been that he fed offal, but that he knowingly fed tuberculous offal. The owner of these swine is scarcely different from others of his class. Tuberculous cattle and swine are being slaughtered elsewhere, but nothing is reported, often nothing is thought of it. It has been the custom heretofore, and no remonstrance is made.

"The infection of swine by feeding offal from tuberculous cattle arouses interest in several directions. The meat of the tuberculous cattle evidently went into consumption, probably sold in the neighborhood. If swine of the same lot were previously slaughtered these too, went into the local market. The present lot are probably not all that have been tuberculous, for the same method of business has probably produced tuberculous swine year after year, only the prospect of a rich purchaser may have tempted the owner to go to the state.

"Against the sale of diseased carcasses of all kinds, the public can have but one protection, namely, enforced slaughter at centralized abattoirs, at which the slaughter may be economically inspected. So long as animals are killed anywhere and everywhere, out of sight, just so long must the present condition as regards the sale of diseased meats exist. Fortunately the bulk of cattle slaughtered are healthy. The feeding of offal to swine has been the custom from time immemorial. While the fresh, healthy offal, fed in limited amounts may not be injurious, still, on account of abuses, the filth surrounding slaughter houses, and the dangers of spreading disease, the custom should be discontinued. In this

again, there is strong argument for centralized abattoirs, where all the meat may be properly chilled, refuse properly tanked and otherwise disposed of."

Respectfully submitted,

S. CASE JONES, M. D.,

F. W. SMITH, M. D.,

Tuberculosis committee

Post Mortem Report

Date, April 12, 1898; owner, John S. Shoemaker; residence, Niverville, Columbia county, N. Y.; number of animals, 26 head of swine.

Color and Sex	Age	Post Mortem Lesions
1 Black sow.....	Yearling	Extensive tubercular lesions in both lungs, pancreas, submaxillary, bronchial, mesenteric glands
2 White "	"	Extensive tubercular lesions in both lungs, pancreas, liver, submaxillary, bronchial, mesenteric glands
3 Red "	"	Extensive tubercular lesions in both lungs, bronchial and maxillary glands and liver
4 White "	"	Small tubercular lesions in submaxillary glands
5 White "	"	O. K. dressed weight, 70 pounds
6 White "	"	O. K. " 66 "
7 Red and white sow.....	"	O. K. " 100 "
8 Red sow.....	"	Small tubercular deposits in submaxillary and pectoral glands
9 Red boar.	"	Small tubercular deposits in both lungs, liver and bronchial glands
10 White sow	"	O. K. dressed weight, 98 pounds
11 Red "	"	Litter, 24, 25, 26; dressed weight, 105 pounds
12 Black and white sow.....	"	Litter, 15, 16, 17, 18, 19; tubercles in pectoral glands, both lungs and liver
13 Red boar.....	2 years old	Extensive tubercular lesions both lungs, liver, submaxillary, bronchial and mesenteric glands
14 Black and white sow.....	2 " "	Litter, 20, 21, 22, 23; extensive tubercular lesions both lungs, liver, submaxillary, bronchial and mesenteric glands
15 Black and red "	4 weeks old	(died yesterday) Small tubercles in right lung, broncho pneumonia of both
16 Red boar.....	4 " "	Small tubercles in right lung, broncho pneumonia of both
17 Black and white sow	4 " "	Small tubercles in anterior lobes of both lungs and submaxillary glands
18 Red, white and black boar.....	4 " "	Small tubercles in both lungs, liver and mesenteric glands
19 Red and white sow	4 " "	Small tubercles in mesenteric glands and liver
20 Red "	5 months old.....	Tubercles in submaxillary glands and liver
21 White "	5 " "	Tubercles in pectoral glands and liver
22 Black and white boar.....	5 " "	Tubercles in pectoral glands and liver
23 Black and white sow.....	5 " "	Tubercles in both lungs and mesenteric glands
24 Red boar.....	6 weeks old	Patches of broncho pneumonia in both lungs
25 " "	6 " "	Broncho pneumonia in left lung
26 " "	6 " "	O. K. not dressed; too small to sell

H. B. AMBLER, D. V. S.;
Inspector

SYRACUSE, May 23, 1898

The tuberculosis committee respectfully report for the month ending May 23. About May 6th, a herd of 19 cows in the town of Sandusky, N. Y., was reported as badly diseased with what was thought by a local veterinarian to be tuberculosis, one having recently died. On May 13 and 14 this herd was examined and tuberculin tested by Dr. Cooper Curtice. Ten cows in this herd were found badly diseased but the inspector really came to the conclusion that the disease was not tuberculosis. All were found to be suffering from multiple abscesses, resulting, in the opinion of the doctor, from their unsanitary environment and improper feeding.

The condition of these cattle was reported to the Agricultural department and the local board of health, and their quarantine advised.

May 4th a communication was received from health officer M. L. Bates of Canaan, N. Y., reporting the tuberculosis disease of a cow slaughtered for beef kept and pastured with 23 other cows belonging to six different owners, who realizing and recognizing the possibility of the infection of their cattle, desired to have them all tuberculin tested. Dr. H. B. Ambler was accordingly directed to make the test, which showed two to be tuberculous.

They will be maintained in quarantine until slaughtered.

May 26th a single cow in the village of Waterloo was reported as diseased. The tuberculin test proved tuberculosis. The milk of this cow had previously been sold to residents of the village.

Respectfully submitted,

S. CASE JONES, M. D.,

F. W. SMITH, M. D.,

Tuberculosis committee

SYRACUSE, N. Y., June 23, 1898

To the State Board of Health:

On May 31st, the committee examined and tuberculin tested the herd of cows supplying milk to the Canandaigua orphan asylum, and found it to be free from disease. A herd of 14 cows

in the town of Geneseo were examined on June 2nd, and 2 were found to be tuberculous.

On June 11th and 12th, a herd of 41 head of dairy cattle, in the town of Otego, were examined, and 11 head found tuberculous.

During the last month several owners of small herds have been induced to have their herds tested at their own expense, and in this way several tuberculous animals have been detected and destroyed. We find cattle owners who are willing to stand the expense of testing their own cattle, are invariably willing to destroy any found diseased. We are beginning to see the fruits of our educational work, brought about by the distribution of our circulars of information and instruction, one veterinarian alone, having sent us several reports of private tuberculin tests, which he believes he has obtained through our circulars, which he has distributed to his patrons. We have received several calls for these circulars, from veterinarians and health officers, which they desired to distribute to inquiring dairymen.

During the last month no tuberculous cattle have been destroyed by the committee. Those found diseased have been reported to the local health officer, who was informed in each case that it was his duty to protect the public health, by preventing the sale of their products, as well as to prevent the dissemination of disease to healthy cattle, by maintaining them in quarantine until destroyed. We believe with the small sum of money available for our uses, that it is the proper course to take, in as much as the law makes it discretionary with us, whether we order them killed or not.

By this method the money available can be used to detect and point out a much larger number of diseased cattle, which if properly quarantined by the local health authorities, will accomplish vastly more good, than if a very few were detected and slaughtered, which must be the case if a large share of our limited means are used in paying indemnities.

During the last month, our inspector, Dr. Cooper Curtice, has spent some time in Buffalo investigating a report in one of our

agricultural papers, that traffic was being carried on there by the stock men, in tuberculous cattle shipped from other states. It transpires that a cow tagged, condemned, by the Bureau of Animal Industry officials, was recently sold in Buffalo, and afterwards died with what was reported to be tuberculosis. The investigation of our inspector shows that she died of some other disease. He also learned she was only condemned for beef, because she was in the advanced stage of pregnancy, and not because she was diseased.

The Bureau of Animal Industry officials inspect all cattle imported for beefing purposes from Canada, and accept the certificates of tuberculin inspections from Canadian veterinarians, who have the endorsement of the provincial government. If the cattle are not accompanied by such certificate, they are held for 94 days, and inspected here.

The inspection and condemnation of an animal recently shipped from Canada in advanced tuberculosis, would throw in question the integrity of at least one of the Canadian inspectors, and cast suspicion upon the accuracy and efficiency of the Canadian work, and until further observations have proven the Canadian inspectors inaccurate or unfaithful in their work, their inspections for tuberculosis must be regarded as correct and of much value to the cattle industry in this state. The main bulk of milch cows sold in Buffalo do not pass through the hands of the bureau officers for tuberculin inspection. Such cattle largely come from Iowa, Indiana, Illinois, Ohio and elsewhere. If destined for Massachusetts, or Pennsylvania, they are inspected in Buffalo by inspectors designated by authorities from those states although cattle owners are obliged to pay for the inspection.

These inspectors are for this purpose practically state agents. They certify to the health of the cattle sent into those states and reject all tuberculous cattle, refusing to tag them. This procedure results in the exportation of the sound cattle, and the throwing of the tuberculous into the New York herds.

The accusation that owners willfully dispose of these tuber-

culous cattle in opposition to the laws of the state, and all humane sentiment, we are not at present able to prove in any given instance, but it is a matter of common report among those closest to the transaction.

Of all cattle thus examined, from 7 to 10 per cent. are said to be rejected, and so far as can be learned, none are killed. Cattle thus submitted to the state are almost always apparently in good condition, about to calve, or are fresh in milk, and really form a dangerous class which the state has been striving to keep from the channels of traffic. These rejected cattle go one by one, or in groups of two or three, to dairies or breeders, and introduce disease into those herds, much faster than would be the case, were there no inspection for Massachusetts, Pennsylvania, Vermont or other states.

Veterinarians who make these inspections we think would be willing to report these cases, were there a general law covering them, and demanding of all veterinarians that such cases should be reported. At the present time none wish to risk the loss of other business which would follow the reporting of these cattle under present conditions. We learn that the Interstate commerce law interferes with our demanding that the authorities of other states test all cattle coming to this state, and send with them a certificate of health.

It is obviously impossible with the small amount of money at our disposal, to keep at Buffalo, or other places, inspectors to examine and tuberculin test the cattle designed for dairy or breeding purposes. Under existing laws, it seems to us a matter for the Bureau of Animal Industry to take charge of, and we believe it is a matter of much greater importance from a sanitary standpoint, as well as of value to the cattle industry, than the inspection of beef cattle now so carefully carried on by their department.

Under the law we are permitted to kill all tuberculous cattle and if in the possession of the owner for a period of less than 3 months they cannot ask for appraisal or indemnity. We are

looking for just such cattle, and any found will be promptly destroyed.

The conditions before mentioned are becoming known to dairymen and dealers in our state, many of whom will not purchase cattle that have not passed the tuberculin test, and when all dairymen and breeders have attained intelligence enough to do this, no cattle will be then brought into this state, without first having been tested, for if tested in this state and rejected, they must be a total loss to their owners, or be sent back to the state from whence they came.

Respectfully submitted,

S. CASE JONES, M. D.,

F. W. SMITH, M. D.,

Tuberculosis committee

SYRACUSE, N. Y., *July 23, 1898*

To the State Board of Health:

During the month ending July 23, there has been examined and tuberculin tested, under the supervision of the tuberculosis committee, 81 head of cattle, comprising eight small herds situated in different localities about the state. Of the 81 cattle tested, only three were found to be tuberculous.

We were led to examine one herd, from the fact that a cow from this herd had been slaughtered, a short time before for beef, and found so badly diseased with tuberculosis, that the carcass was confiscated by the local health authorities. Two animals were found in this herd that showed physical signs of the disease, and they were the only ones that gave a reaction to the tuberculin test. These cases were reported to the local health officer, who was notified that it was his duty to maintain them in quarantine until destroyed by the owners.

The first one of the three reacting animals found during the month, was destroyed immediately after the second test, the first test having been made about three weeks previous, the cow giving a good reaction at both tests. This we consider an important circumstance and interesting, from the fact that it has been said that

a second test is not reliable until after the lapse of a considerable longer period.

Respectfully submitted,
S. CASE JONES, M. D.,
F. W. SMITH, M. D.,
Tuberculosis committee

SYRACUSE, N. Y., August 23, 1898

To the State Board of Health:

Gentlemen—During the month ending August 23, an unusual number of suspected cattle have been reported. Three herds comprising 36 head of cattle have been examined and tuberculin tested, and seven have been condemned and slaughtered. Of those examined ten were Jerseys and 26 Durhams. Of those condemned there was one Jersey and six Durhams. Of the cattle condemned during the month of July, two have been killed during the month of August. A microscopical examination of a portion of the lung, and mediastinal glands of one of the cows, showed the presence of the tubercle bacilli.

One calf four months old, gave the characteristic reaction to tuberculin and autopsy showed extensive lesions of tuberculosis. The animals slaughtered were destroyed without appraisal, the owners readily consenting to waive their rights of appraisal, in each instance.

Several herds have privately been tuberculin tested by owners, the committee furnishing the necessary tuberculin. During the month 125 letters have been written and 532 circulars have been mailed. Since January 1st, 347 cattle have been tuberculin tested, 33 have been condemned and 20 have been slaughtered.

Of those examined, there were 88 Jerseys, 24 Holsteins, 71 Durhams and 164 of common or mixed breed. Of those condemned, 11 were Jerseys, eight Durhams and 12 common or mixed. The committee are only testing such herds as show reasonable evidence of disease, by inspection, in one or more members of the herd.

Respectfully submitted,
S. CASE JONES, M. D.,
F. W. SMITH, M. D.,
Tuberculosis committee

SYRACUSE, N. Y., *September 23, 1898*

To the State Board of Health:

Gentlemen—During the month ending September 23d, 78 head of cattle, comprising seven small herds, have been tuberculin tested and seven condemned and slaughtered. One hundred and thirty-five letters have been written and 646 circulars have been mailed and distributed to veterinarians and cattle owners.

Of the cattle examined, seven were Jerseys and 71 of the common or mixed breeds. The seven condemned animals were all of the common breed. The condemned cattle were all destroyed, the autopsies showing extensive disease in each case. All were destroyed with the consent of the owners, who in each case waived the matter of indemnity.

Since January 1st, 425 cattle have been tuberculin tested and 40 condemned. Of these, 27 have already been destroyed. Of those examined, 95 were Jerseys, 24 were Holsteins, 71 were Durhams and 235 of the common or mixed breeds. Of those condemned, 11 were Jerseys, eight were Durhams and 21 were of the common breed.

Illustrating the character of the object lesson afforded in the slaughter of cattle recently condemned, we quote from the reports of two veterinarians, acting as our inspectors. Dr. T. H. Bradley of Fredonia says regarding cattle recently slaughtered in Genesee county: "The autopsies showed up beautifully and I had about 30 spectators."

Dr. Turner, of Syracuse, regarding a recent slaughter of tuberculous cattle in Broome county, says, "On arriving at the farm. there were in waiting, 45 farmers and two veterinarians, to see me slaughter and make autopsies on the cattle, some of whom came from a distance of ten or fifteen miles. Dr. Baker, of Marathon, came at the request of the owner, to see that the cows slaughtered were diseased. Dr. Baker and the farmers were all well satisfied with the examination of each cow, and also that there is such a disease as tuberculosis in cattle."

Respectfully submitted,

S. CASE JONES, M. D.,

F. W. SMITH, M. D.,

Tuberculosis committee

SYRACUSE, N. Y., *October 23, 1898*

To the State Board of Health:

Gentlemen—During the month ending October 23d, 214 head of cattle have been examined, 119 head have been tuberculin tested, and of those tested, nine were found tuberculous. One animal was condemned on physical examination. Of those examined during the month, seven were Devons, 69 were Jerseys and 207 were natives or common stock. The nine animals condemned were all common stock. Four of those condemned have already been slaughtered and the remainder are in quarantine under the charge of the local health officers.

Since January 1st, 544 head of cattle have been tuberculin tested and 49 condemned. Of these, 31 have already been destroyed. Of those examined, 109 were Jerseys, 24 were Holsteins, 71 were Durhams, 339 were common stock and seven were Devons. Of those condemned, 11 were Jerseys, eight were Durhams and 30 were of the common or mixed breed.

Since we began the distribution of our circulars of information and instruction regarding tuberculosis in cattle about one month ago, there has been a large increase in our correspondence, and it is with much satisfaction, that we note the constantly growing interest that veterinarians and cattle owners are taking in the matter of tuberculosis.

Respectfully submitted,

S. CASE JONES, M. D.,

F. W. SMITH, M. D.,

Tuberculosis committee

SYRACUSE, N. Y., *November 23, 1898*

To the State Board of Health:

Gentlemen—The tuberculosis committee respectfully reports for the month ending November 23, 1898: During the past month 295 cattle have been examined, of which 108 head have been tuberculin tested. Of the latter number, 22 have been condemned. Since January 1st last, 1053 cattle have been examined, of which 652 have been tuberculin tested and 71 condemned as tuberculous, 35 of which have already been destroyed.

Of those tested, 128 were Jerseys, 41 were Holsteins, 72 were Durhams, seven were Devons and 413 of the common or mixed breeds. Of those condemned, 25 were Jerseys, nine were Durhams, one Holstein and 36 were of the common or mixed breeds.

With the stabling season, comes to us an increased number of reports of diseased cattle, and requests for the inspection and examination of dairies. Thus far in our work we have examined only such herds as have been reported to us by owners or health officials, as having one or more diseased cattle in them. There is strong pressure being brought to bear, to take up the examination and purification of the milk supply of certain cities. With sufficient funds at our disposal, we should be pleased to take up a systematic examination of city milk supplies, but it has been thought best up to present time, simply to continue to examine and purify herds known to be diseased, and many such herds are constantly being reported.

That cities, towns and sanitary officials are generally taking greater interest in the matter of insuring for themselves, a pure milk supply, is shown by the greater frequency of which reports of diseased cattle are being sent to us by local health officials.

That farmers and dairymen are becoming more alive to the dangers of bovine tuberculosis, is shown by the more frequent reports received from farmers who say that their neighbor's cattle show signs of disease, and that they fear the disease may be communicated to their own herds, as their cattle must necessarily run in adjoining pastures with only a fence between.

Recently there was a controversy over conditions found at the autopsy of a cow that was killed by one of our inspectors, as to whether the lesions found were those of tuberculosis. To prove his diagnosis, our inspector inoculated two rabbits with the diseased tissues of the cow, and on the sixteenth day the two rabbits died, the autopsy of both showing plainly tuberculous disease. The rabbits though well fed, and continuing with good appetites almost up to the time of their death, had become since the inoculation, very much emaciated.

The milk of another cow slaughtered, was subjected to a careful microscopical examination, and was found to contain the tubercle bacilli in great numbers.

The milk from this cow had been used for some time, to nourish a child now about one year old. This child is in very poor health and probably has tuberculosis. We have the child under observation and shall be able to report future developments.

Respectfully submitted,

S. CASE JONES, M. D.,

F. W. SMITH, M. D.,

Tuberculosis committee

SYRACUSE, N. Y., *December 23, 1898*

To the New York State Board of Health:

Gentlemen—The tuberculosis committee respectfully reports for the month ending December 23, 1898: During the last month, 184 cattle have been tuberculin tested, comprising 12 herds, in compliance with the request of the owners. These herds were all known to have in them one or more diseased animals. Out of the whole number tested, 16 were tuberculous, five of which have already been destroyed, the remaining 11 are being maintained in quarantine by local health officers.

Since January 1st, 1237 head of cattle have been examined, and 836 have been tuberculin tested, of which 87 have been condemned, 40 of which have been destroyed. Of those tested, 146 were Jerseys, 75 were Holsteins, 78 were Durhams, seven were Devons and 539 were of the common or mixed breeds. Of those condemned, 33 were Jerseys, nine were Durhams, three were Holsteins and 42 were of the common or mixed breeds.

During the past month, 204 letters have been written, and 1568 circulars mailed or distributed to veterinarians or cattle owners. About December 1st, the Syracuse board of health passed an ordinance requiring all peddlers or dealers of milk, furnishing milk within the city limits, to file with the board on or before April 1st next, a clean bill of health, of all cattle supplying their milk, the certificate of health to include the tuberculin test. On failure

to comply with the provisions of the ordinance, license to sell milk will be refused. In compliance with this ordinance, four herds have already been tested, and we have applications for tuberculin enough to test several more herds.

We are distributing tuberculin manufactured by the New York State veterinary college without charge, to all parties desiring it, on condition that we receive in return a copy of all tuberculin tests made with it, on our blanks; thus we will be enabled to locate many tuberculous cattle.

If other cities and towns would follow the example set by Syracuse, much practical good would be the result.

Respectfully submitted,

S. CASE JONES, M. D.,

FREDK. W. SMITH, M. D.,

Tuberculosis committee

HISTORY OF AN OUTBREAK OF SMALLPOX IN 1898

F. C. CURTIS, M. D., *Sanitary investigator:*

An outbreak of smallpox, extending over almost a year, traceable to a single source, reaching forty health districts and nearly three hundred individuals, yet attended with but a single fatality, is an important experience and calls for a record.

No year in the history of the State Board of Health has passed without the report of deaths from smallpox, the yearly number in the past ten years, prior to 1898, having been from 3 to 300, with a yearly average of about 80 deaths. But with the exception of the years 1892, 1893 and 1894, when there was extensive prevalence and from 150 to 300 deaths each year, the number has been small and for the most part limited to the large metropolis.

In 1898 there is a record of one death, but it occurred in the city of New York and the 15 cases reported from that city had no relation to the outbreak now under consideration, and in 1899 there has been but one death from smallpox outside that city.

A theatrical troupe, traveling from place to place in its own private railroad cars, and exhibiting in its own tent, came into

this state from southern states by way of Pennsylvania, making its first appearance at Westfield, Chautauqua county, April 28th. One of the members of this troupe, who gives no evidence of having been vaccinated, was taken sick March 21st, in Charleston, W. Va., with fever lasting three days, during which time he was ill enough to give up his work, an eruption then appearing on the face and wrists, which was seen by a physician and diagnosed as chickenpox, but which the sequel proved to be smallpox. He contracted the disease probably in Richmond, Ky. He left the company and returned to his home in Huron, Mich., where his brother joined him and the two soon rejoined the troupe. On April 25th, two weeks after coming in contact with the first case, the brother developed the initial fever of varioloid. He was not long incapacitated, and participated in the street parades and performances of the company. Having visited Westfield April 28th, their subsequent course in this state until it was finally arrested was as follows: April 29th, Fredonia; 30th, Lockport; May 1st, Buffalo; 2d, Mount Morris; 3d, Dansville; 4th, Bath; 5th, Corning; 6th, Waverly; 7th, Binghamton; 8th and 9th, Norwich; 10th, Oxford; 11th, Greene; 12th, Whitney's Point; 13th, Marathon; 14th, Cortland; 16th, Groton; 17th, Moravia; 18th, Union Springs; 19th, Ithaca; 20th, Trumansburgh; 21st, Geneva.

At all of these places, reached by rail on private cars, there were street parades and performances in their own tent, the affected members usually participating. A third member of the troupe was taken on the way and seen by a physician, who made a diagnosis of chickenpox and he continued with his work.

At Ithaca, May 19th, a fourth member of the troupe was taken much more severely sick and remained there, and speedily developed what was then for the first time recognized as smallpox. Information of this was communicated two days later to the health officer of Geneva, where the troupe was stopped in the midst of a street parade and quarantined in their cars. A fifth case, vaccinated and but mildly affected, was then in the active

stage of this disease, and the third case was recovering, the two first subjects being then well.

Both of the more recent cases, when I saw them on going to Geneva, were not so sick but that they were able to be about; they were of the abortive type which characterized the most of the cases subsequently occurring in this state. The older cases had marked stain and moderate pitted cicatrice, most abundant on the face.

Two more members of the troupe developed the disease after quarantine was established, but the evidence of the promptness and efficiency of the care the outbreak received at Geneva is shown by the fact that no one outside the troupe took the disease in that city.

The entire company, 26 in number, with all their belongings, were removed to an unused steamer, which was moored out in the lake and kept there, all being vaccinated, until June 21, when they were released.

Dr. Bishop, health officer of Geneva, thus describes the two cases which developed under his observation:

One C. W. C., age 22, never successfully vaccinated, had fever, nausea, vomiting, malaise, pain in back and limbs. After two days a papular rash appeared on the forehead and face, extending progressively over his arms, body and legs, involving also the mouth and fauces. On the fourth day some papulæ became vesicular, with flattening tops and then umbilicated. On the sixth day there were many pustules and by the ninth day the eruption was wholly pustular. There was intense tumefaction and congestion of the skin, tissues of the eyelids, tongue and throat, causing much pain, closing the eyes and allowing the injection of liquids only with difficulty. On the tenth day the pustules began to break, forming confluent crusts that covered the chin and the forehead. The primary and secondary fever was marked. Convalescence was rapid and he was discharged well on the thirty-first day. Each pustule left a cicatricial mark which however showed daily improvement.

The second, E. D., who then had a large umbilicated vesicle on his arm from vaccination became sick on the tenth day of quarantine, with nausea, malaise, fever and pains. On the fourth day after he had a well developed outbreak on the skin of vesicles which soon became pustular and then rapidly dried up and disappeared, the general symptoms being very mild. His attack was evidently modified by the vaccination.

Photographs of one of these cases in the active stage are very characteristic of smallpox. These two illustrate the occasionally seen severe form subsequently met in epidemic which followed, and the mild form which was most frequently seen.

An eighth member of the troupe left it sick May 18th, for Buffalo, where he developed what was recognized as smallpox. The rest of the membership escaped taking the disease.

Warning was sent to all health authorities along the course traversed by the troupe immediately upon receipt of our information.

No spread of the disease beyond the membership of the troupe was known of until May 30th; then Dansville, where they exhibited May 3d, reported a mild case followed by three secondary cases. Three boys from Dansville also escaped from a quarantine enforced upon them, and went to Rochester, where, after being held under suspicion for several days, they were recognized as having variola.

During the week following other cases were reported. Locke, Cayuga county, developed a case the first of June, contracted at Groton, where the subject attended a performance of the troupe May 16th. It was immediately recognized and no secondary case followed.

Union Springs, same county, where the troupe exhibited May 18th, developed a case during the first week in June, and in all there were seven cases, of which three only were discovered at the time, and it was not until the end of August that the town was free.

West Sparta, Livingston county, about the same time reported a case, secondary to another case, his brother, who, not having

been ill enough to call a physician, was not detected; the disease was contracted at Dansville. There was, however, no further spread.

June 24, word was received of the prevalence of what was called varicella in Fredonia, Chautauqua county, while the theatrical troupe was here, April 29th, the second case was in the active stage of his sickness, and although his eruption was quite profuse, he had felt well enough to attend to his duties. Dr. Bishop of Geneva, learned from him that in Fredonia he took a warm bath at the hotel to allay the irritation, and while in the bath opened all the pustules within easy reach, used the hotel towels to dry himself, and that evening took the tickets at the theatre entrance.

Cases of the disease developed in the village May 7th, and a few days later in the town (Pomfret), but until June 22, no restriction was placed upon them, when Dr. Ernest Wende, health commissioner of Buffalo, saw them and made the proper diagnosis.

Although the subjects were all adults, the nature of the disease was not recognized, chiefly because their disease was so mild they were not confined to their homes. There must have been a very general exposure. When I went there, however, June 25th, I found in the village and within two miles of it in the surrounding town but ten families affected, there being then but 25 cases in all; one would anticipate a much more extended spread. There were not discovered to have been more than 35 cases up to that time, although it is possible there were undetected cases. I found the village cut off from the world, Dunkirk and other surrounding towns having established a most rigid quarantine against it.

Steps to control the outbreak were taken as soon as the character of the disease was recognized, and there were only 5 subsequent cases, or 40 in all.

It was found that two weeks after the troupe was there two individuals had taken sick, and the subsequent cases followed at appropriate intervals.

At Moravia a laundress did some work for members of the troupe when they were there May 17th; two weeks after she was taken ill very lightly. Her sister, living with her, contracted the disease from her in mild form, the nature of it being recognized in neither of them. In turn her husband was taken with it, more severely, and when I saw him June 29th I had no difficulty in recognizing his disease, for he had well marked modified smallpox, and his photograph taken at the time is fairly characteristic. It was not easy to convince the people of the village that they had smallpox in their community, but nevertheless, the necessary precautions were enforced and fortunately the disease was limited to this single family.

The tendency of secondary cases to greater severity than the primary ones was noted in not a few instances. A prolonged continuance would no doubt end in a more characteristic type of the disease.

After an interval of several weeks, extending through the month of July, during which all known cases had recovered, cases of varioloid were reported from the town of Burton, Tioga county, three miles from the village of Waverly. Preexisting cases of what was called varicella had existed, and there is no doubt, from the sequel, that these were variola. As far as could be ascertained these cases began about the first of June. The theatrical troupe exhibited in Waverly May 6th, and doubtless the onset, in a rural part of the town, was directly traceable to it, although it was reported that cases of variola occurred in Athens, Pa., three miles distant, which, however, very likely had their origin also from the troupe at Waverly.

Fifteen cases existed prior to detection and 10 cases subsequently, 25 cases in all occurring in the town and village. This outbreak was controlled and at an end August 31st.

August 8th the health officer of Livonia, Livingston county, reported one case of varioloid. This was recognized at once and placed under restriction and no other case followed. On inquiry as to the movements of the patient prior to the onset of this disease it was ascertained that 14 days before his initial fever began

he was in the neighboring village of Mount Morris, where it was clear that the disease originated.

On investigation unrecognized smallpox was discovered at Mount Morris; it had been regarded as chickenpox. The disease developed in the town soon after the theatrical troupe visited Mount Morris, May 2d, and with little restriction of the sick continued until the last of August; at that time, however, I found but one active case in the town and there had been so far as could be learned not more than 15. In one case an entire family was found bearing the marks of the disease, but they had been so slightly ill that they had not been seen by a physician. The further spread was soon suspended after suitable restriction was placed upon the sick and there were 20 cases in all.

From Mount Morris the disease further spread, not only to Livonia, but to Belfast and Caneadea, Allegany county, to Groveland, Livingston county, to Alden, Erie county, and Machias, Cattaraugus county, the appearance of it in all of which places was traced to Mount Morris, directly or indirectly. These were the first cases to be reported not directly originating from the traveling troupe.

Belfast cases began to occur in July, beginning with a resident of the village who made a transient visit to Mount Morris. Four cases occurred before recognition and there were nine in all.

Caneadea, adjoining Belfast, contracted the disease from Belfast, September 1st, and was at once recognized and limited to one family, six of the members of which had smallpox, some of them in severe form. At Allen also, in the same county, nine cases occurred, originating from Belfast; six of these had existed without detection prior to discovery by our inspector.

At Cuba also, near Belfast, four cases in October were discovered by our inspector, and probably from the same source.

Groveland had five cases, all in a single family living in a rural locality; one of the subjects went to Mount Morris about the middle of July, and two weeks after developed smallpox, which was recognized as such by the health officer.

Two cases developed at Alden in September, a mother and daughter, the diagnosis being confirmed by Dr. Wende, health commissioner of Buffalo. The disease was brought by a nephew who was ill in Mount Morris and returned before full recovery.

At Machias there were two cases in September, originating from a relative who contracted the disease at Mount Morris and went to Belfast, where its course was so mild as to again secure a diagnosis as varicella.

Geneseo, in Livingston county, adjoining Groveland had six cases in September, which were diagnosed by the attending physician as chickenpox, but were recognized by Dr. Doty of this Board and health officer of the port of New York, who was visiting there and encountered one of the subjects by accident on the highway. While most of the cases, which were all in one family, were mild, one at least was of severity. The origin was possibly from the Groveland cases and indirectly from Mount Morris.

At Conesus, adjoining Geneseo and in Livingston county, five cases occurred in October, one of which was severe, this outbreak being limited to six weeks. It was traceable to Geneseo, and indirectly to Mount Morris.

In October outbreaks began to occur, the origin of which was doubtful.

Dunkirk reported a case October 5th, of mild character. The health officer, Dr. Ralph, made every effort to discover the origin without satisfactory result. It is likely that mild and undiscovered cases preceded this; 19 cases in all were reported, of which 13 were discovered. There were new cases occurring until in January, and probably from fresh importation. Whether these cases are to be considered as belonging with those originating from the theatrical troupe in this state or whether they came as was suspected, from Pennsylvania cannot be stated, but in either case no doubt the original source was from the troupe.

At Cherry creek there occurred a case originating from Dunkirk.

At Elmira October 14th we discovered a case, which had been preceded by two others in the same house which were not recognized. There were eight cases in all in the course of two months; and from a fresh inspection in the spring following three more. The origin of these outbreaks was obscure; a surmise, not verified by actual tracing, was that they came from the near by territory of Pennsylvania. Two cases, directly imported from Elmira, occurred in the neighboring town of Wellsburgh in October.

At the same time that Elmira was first visited I went also to the village of McLean, in the town of Groton, Tompkins county, where two well-marked cases were found. Here again it was found that there had been other cases for an indefinite period, in the village and town, a diagnosis of contagious impetigo having been made here. There is little doubt but that the origin of this outbreak was direct from the traveling troupe which exhibited in Groton, May 16th, and that cases, generally regarded as chicken pox, had prevailed in the vicinity from the first of June. There were about 40 cases in all in the town and in McLean, the last of them being disposed of in December.

From McLean the disease spread to DeRuyter, in Madison county, and the adjoining town of Cuyler, in October, by direct importation, and 12 cases occurred there.

In Cortland also one case originated from the same source.

The development of smallpox in so many new places and the discovery of its unrecognized existence for prolonged periods made it essential that more direct and constant supervision should be established, and that an inspector familiar with the disease should be placed in the field. Dr. M. G. Franghiodi, of New York city, was therefore put in charge of this work in October and continued there, going from place to place, for two months. He discovered localities where it had not been detected and did much to hasten the subsequent suppression of the disease in this part of the state.

Rochester reported a case October 26th, the origin of which was from a roving individual who was temporarily in the house and

who subsequently went to Toronto where she developed smallpox as reported to us by the health authorities of that city. Where she contracted it was not learned. Three other cases occurred in this family. In December new cases occurred and up to February 15th there were nine cases in this later outbreak, with one fatal, the only one outside of New York city in the two years.

The origin of these cases was very likely from some of the places where the disease was existing in the state.

The difficulty of detection of all mild cases in the irresponsible and careless quarters of a large city is greater than in rural towns and cases may have escaped it. At any rate in the adjoining towns of Penfield, Minden, Brockport, Clarkson, Greece and Gates, all in Monroe county, cases occurred during December, January and February, the origin of some of which was traced to Rochester, and some of which cases Rochester received into its smallpox hospital and cared for. Penfield had four cases, one of which, however, in February, was from an outside source and not traced. In Minden there was a single case, in January, origin doubtful; in Brockport one case, attributed to the town of Clarkson, where cases called chicken pox, but of uncertain diagnosis as well as origin, occurred; Greece, four cases in January and February, and Gates one case in February, which were taken care of by Rochester.

At Fort Niagara an enlisted soldier developed smallpox which was contracted at Rochester.

Le Roy, in Genesee county, the last of December developed several cases, and the diagnosis here was perhaps complicated by a coexisting prevalence of chicken pox. There were at any rate 21 cases of smallpox there in the course of the next two months, and cases originating there occurred in Batavia, three, including one some time later thought to have an independent origin; Bergen, 2; Wheatland, 9; Caledonia, 3, of which one developed some time later, in May; Darien in the same county reported several cases in February but without certainty as to their source. By the end of April these cases were cleared up.

Finally, in western New York, after an interval of several weeks an outbreak of smallpox was discovered at Weedsport,

Cayuga county. They were not detected until we saw them in July, but, as was the history of so many other places, there had been for several weeks cases which were regarded as chicken pox. There was no question of the active cases I saw in July being smallpox. What was the origin of the first case we were not able to trace; very probably the first cases were not seen and it is fair to assume that the break of a month or six weeks between the last cases referred to and the first cases discovered here was filled by undetected cases, and thereby maintained the chain of connections to the original source of the epidemic. There were about 20 cases in all at Weedsport, and there extended from these 1 case at Auburn, 1 at Seneca Falls and 1 at Cato, Cayuga county, all of which were at once recognized, quarantined and followed by no secondary cases.

With these cases probably ended the epidemic of smallpox, originating, as has been concisely sketched, from the traveling theatrical troupe in this state. It lasted from May, 1898, to September, 1899, affected 45 localities in 14 counties, and 320 individuals, one of the number only ending fatally. While there is some doubt as to the origin in a few of these places, it is safe to include all of these noted as having this common origin.

Besides these, there were other cases of smallpox in the state which may be mentioned here, to complete the history of smallpox in this state, at least to the autumn of 1899, when this is written.

In October, 1898, a case came to Buffalo, direct from Wisconsin, and in April another from New Mexico.

New Hartford, Oneida county, reported a single case, January, 1899, from Nebraska direct.

North Tonawanda, near Buffalo, reported two cases in one family in March, 1899, probably from an outside source, at least not traced to any known source.

Syracuse, about May 1, had a case, the origin of which was not known.

Kingston, April 1st, reported a case, recovering without spread, which originated, it is supposed, from New York.

At Shelter Island and White Plains there were also cases, one at each place, in July, which had the same probable origin.

Then early in June there were interesting outbreaks in Coeymans, Albany county, and Athens, a little below, on the Hudson river. Both of these were among negro laborers in brick yards. It is the custom in these yards to employ in the spring negroes brought directly from the South, in these cases coming mostly in a body, about 100 or 150 in number, from rural parts of Virginia. They live quite apart from the rest of the community, in lodgings provided at the yards. Apparently the disease was brought to them by a tramp negro from the same locality. There were but 7 cases in the Coeymans yards and no spread beyond the negro laborers. At Athens it was much more general, and the difficulties of the case were such that the disease spread more extensively, lasting through August, and 34 cases in all occurring, most of them so mild that they were not incapacitated from their work—in fact, they were allowed to continue their work, the entire force being all held in quarantine. Two or three negroes in the village came in contact with them and were taken, but there has been no further spread beyond these. All these cases were of the same mild type noted in those previously reported on.

Niagara Falls, about the first of July, began to have well-marked cases of smallpox; there was no question as to the diagnosis when I saw them, in August, though the diagnosis of vari cella had here also been made. This outbreak was controlled in September, there having been 12 cases. The origin was probably from without the state, occurring as they did at a point near our border, but no satisfactory source could be discovered.

Finally, at Horseheads, Chemung county, a single case, traced to a town in Pennsylvania a few miles distant, was reported September 19th. With this exception there is at this time (October, 1899) no small pox in this state and no other new case has been known of for two months.

Numerous localities have been under suspicion and visited during all this time, where, however, it was not found to exist.

In all there were 66 cases or origins independent of those traced to the traveling troupe.

No note is taken, however, of the city of New York, where occasional cases occur from sources outside those of the state at large. There were reported there during 1898 15 cases, one of which was fatal—the only death from smallpox during the year—and thus far, in 1899, there have been 44 cases, 17 of which were fatal.

This outbreak of smallpox of 1898, the course of which has been outlined, followed a long period of complete immunity so far as the state at large is concerned. In 1892, 1893 and 1894 there were not a few cases in various localities, but since then not a case has existed outside of New York city.

This extensive prevalence which this state has experienced is only a part of a general, and in some states much more widely spread, prevalence throughout the country.

And the remarkable fact of the mildness of the disease, which has, in fact, been the chief cause of its being allowed to become so extensive, is further remarkable in that the same type of the disease has characterized it, likewise, elsewhere. It is hardly possible, though, that it has elsewhere been so modified from its usual character that in a series numbering 320 cases, or rather, in fact, including all of our cases from various sources for a year and a half, 386 in number, there should have been but a single fatal case, and of the 250 cases detected up to the end of 1898 there was not a death, the only death from smallpox in 1898 having been in New York city.

In any case, however, there was a type of the disease, with its widespread distribution, which was generally the same. Pennsylvania and Ohio have met with the same difficulties attendant upon a failure of diagnosis. Dr. Benjamin Lee, in a recent communication, states that the number of reported cases have been about 900, with but 7 deaths.

The general practitioner, who, in sharp contrast with the experience of the medical profession prior to the almost universal use of vaccination, has seen almost nothing of smallpox, is readily

deceived by such a type of the disease as this. Physicians have, therefore, constantly failed to recognize it, especially as the earlier cases in a community have commonly been more mild than the later ones.

The State Board of Health used every effort to inform health officers of the delusive nature of the disease as prevalent, and by circulars calling attention to essential points by which to recognize it and by means of the public press to keep every one on the alert. While generally it has not been difficult to convince the profession of a locality, that the outbreak could not be other than smallpox, for there have been some that hesitated to accept the diagnosis.

Certain observations may be made record of which determine the fact that this epidemic disease has been really smallpox, and it should be noted that every one whose knowledge of the disease has been such as to make their opinion authoritative has recognized it as such, not only in this state but elsewhere.

The general clinical features presented have been as follows:

A fever has first set in somewhat abruptly but with nothing necessarily peculiar characterizing it. The symptoms have been quite like those of the familiar grippe fever, very generally there was pain in the lower limbs, sometimes pain in the back and headache, often a general sense of aching throughout the body, but not severe as a rule, for emphasis is not laid on it by the patient and it is not different from what might accompany an ordinary cold. The fever increases and after 24 hours is often found to cause a temperature as high as 104°. Nausea and diarrhea were occasionally reported. The marked fever and febrile symptoms it should be noted is commonly found present even in cases which eventuate in the mildest expression of the disease. It continued without other incident and without subsidence for three full days as a rule, and then there was a rather sudden suspension of it, along with which came the first cutaneous eruption. It will be noted that this is a description of the initial fever of smallpox not unlike that of the text-book. As a fact these mild cases had an initial fever not dissimilar from

the typical, and this was an important point in diagnosis for no other exanthem has a fever of such character. But it was not possible to make a diagnosis from the fever alone for, as I would emphasize, it was not a fever having any distinctive features, such as backache, the absence of which as a marked symptom frequently was taken as of greater value than it is entitled to.

The eruption made its appearance with the defervescence, at the part, customary to the disease; that is, on the forehead, about the mouth and chin and soon on the back of the hands, wrists and forearms. It was always most abundant on the face, which was sparsely or thickly covered as the case might be. In the course of 24 hours it extended to other parts of the body to such degree as it might, little or much; there was no coming out of new lesions on succeeding days and in crops as occurs in chicken pox but the eruption was homogenous. This is one point which differentiates it distinctly from chicken pox.

The eruption at its earliest was a red macule, but it very soon became a papule. This solid papule was always to be found, or the remains of it as an induration beneath the vesicle. This determines the nature of the disease as that of variola; the type lesion of variola is a papule, that of varicella a vesicle. It may be possible to find induration at the base of some varicella lesions occasionally, and, per contra, it may be not infrequently the case that *on the abdomen* variolous vesicles may have very little induration (the face is the part to study the lesion). But the papule, developing on which is the vesicle, with a solid base and possibly eventually the pustule, is the lesion to be always looked for and found in variola or any modification of it; this was found in these cases, and with it the uniformity of the bulk of the lesions which has been mentioned. It is on this point, together with the location of the lesion, and their uniformity or multiformity, that the diagnosis between these two diseases, which is sometimes not certain at once to the most expert, turns.

At this point the interesting and almost uniform characteristic of the epidemic occurred, viz: that the disease generally aborted in the vesicular stage. It was in fact an epidemic of abortive

variola. In most cases as soon as the initial fever abated the patient, who during the fever was confined to bed, felt well enough to be up and about. Not a few of these people were found on the public highway after the initial fever had ended. It was in the vesicular stage that most of the cases aborted, but some hardly passed into the stage even of the vesicle, many of the lesions simply continuing as indurated papules. This fact led more astray in diagnosis than anything else. There were here and there cases that continued on into the pustulous stage, but there were very few who had secondary fever or smallpox in typical form, and this was to be looked for only in those cases most remote from the originating parent case, i. e., after an epidemic had continued long in one locality. Even in cases where there could be found no evidence of prior vaccination the epidemic preserved its type. So far as I know this is unique in the history of smallpox.

We see this adherence to a type in other zymotic diseases; in typhoid fever in which a type is very apt to characterize every epidemic, and especially in scarlet fever, of which for some years now we have had a very prevalent form of great mildness throughout the state, hundreds of cases occurring with hardly a death; diphtheria also has a much lower death rate now chiefly from this cause. But this is an unusual quality in smallpox.

The sequent course of the disease has been generally that the patient without feeling ill enough to confine them have recovered without incident, but the lesions continued at hardened nodules, at least on its chosen sites, or as crusted or scaling indurations, which took nearly the ordinary length of time to disappear and which generally left something of a punctate cicatrix and more markedly a lasting stain. Some escaped this, while with many the stain continued for an indefinite period or the scars, though generally superficial, were permanent.

Most had lesions on the roof of the mouth and fauces, which, however, is likewise seen in varicella; and many had them on the pulves which is peculiar to variola.

The subjects were mostly adults, though small children in affected families were taken equally with adults unless protected by vaccination. This is so important that in our circulars of instructions health officers were directed to quarantine all adults as smallpox, who were suspected to have chickenpox. While varicella is certainly possible in the adult it is so infrequent as a fact of common knowledge to the profession, that it is remarkable that it did not take more hold on the minds of attending physicians. It is generally not absolutely easy to diagnosticate chickenpox when it does occur in the adult, from smallpox, and every case should be secluded until the diagnosis is made sure. If the physicians who saw the first case had not fallen into this error the state would have been saved a very considerable outlay.

It was almost always the case that this epidemic in a locality where it failed of recognition was mistaken for chickenpox; sometimes it was called contagious impetigo, to which it bore hardly any possible resemblance, in some instances it was mistaken for a syphilide.

Our epidemic has been one of an exanthem, affecting adults chiefly, with a well marked initial fever lasting three days, deferescence with the coming of the cutaneous lesions, an eruption first and most abundant on the face, wrists, hands and forearms, the eruption primarily a papule, continuing as an induration or the indurated base of a vesicle, followed by lasting stain or punctate scar; the course of the disease has generally aborted in the vesicular stage, but unless so exceedingly mild as to have but the smallest number of lesions, lasting on for three weeks before the lesions could be declared healed—even then continuing for a longer time as unabsorbed indurations.

No diagnosis of such a series of conditions except that of the exanthem smallpox is possible.

Photographs reproduced of some of the subjects met with will be still further convincing, since if nothing else is apparent the distribution of the lesions will be recognized as typical of this disease.

The following is taken from a circular of instructions sent out to health officers:

"As cases of smallpox of mild type are being reported, you are earnestly requested to be on the alert for any outbreak of the disease in your municipality.

"The spread of the disease at the present time may be attributed in a large degree to the fact that many cases of smallpox have been mistakably diagnosed as chickenpox, and it is advised that your board adopt and enforce rules requiring that all cases of supposed chickenpox be reported promptly to them, in order that they may be kept under observation, if necessary, quarantined, until all doubt is at rest and the case certainly not smallpox.

"Note these data to aid you: If an adult; if the initial fever was marked and lasted three days; if the eruption came first on the face and is most abundant there; and if there is any induration of the lesion, as of a papule having become vesicular,—all these or any modification of them are quite conclusive of smallpox. No adult should be allowed at large with an eruption thought to be that of varicella; no case of vesicular exanthem preceded by marked fever, though the fever may have no characteristics differing from that of a severe cold; no vesicular eruption so starting and coming mostly on the face, wrists, (and frequently on the palms) is likely to be anything but smallpox; and if there is any induration of the base of the vesicular lesions, all of these are to be held as conclusive symptoms. In every case give the public the benefit of the doubt, and now especially, when this disease in a mild form is quite general and we find so often escaping detection."

This state has been fortunate in the control of smallpox to the degree that it has. But our neighboring or more remote states are not free from it, for we have constant reports of its continued prevalence elsewhere, and while there may be none of it within our own borders at this moment it is liable to reappear at any time. The education we have received since May, 1898, should make it no longer possible for any importation to

secure headway, and we have learned that immediate recognition and control have been uniformly protective to every community. If our wise law requiring the school authorities to exclude from the public schools all unvaccinated children is universally enforced, as unfortunately it is not in many districts, we can feel abundantly secure against an epidemic which has during the past 18 months been found in many ways, light as was its expression, a costly one.

SMALLPOX EPIDEMIC

M. G. FRANGHIODI, M. D.

To the honorable the Board of Health, New York State, Albany, N. Y.:

Gentlemen—I beg to make the following report of my work while acting as temporary medical inspector under a commission to deal with the smallpox epidemic in the state of New York.

I left Albany for Ithaca on October 22, where I was requested to see a young man who had been isolated on account of an eruption on his person resembling that of smallpox. On examination the eruption proved to be that of *acne undurata*.

On October 23, I visited McLean. I found there six cases of smallpox with well developed eruption, and three cases which showed premonitory symptoms. At my request a meeting of the local board of health was called, and the following method of dealing with epidemic determined on:

Full power was given to the health officer to expend such money as would be necessary for the proper isolation and disinfection of the infected houses, and for the purchase of vaccine virus; wherever a case developed the infected premises were to be quarantined and those persons who had come in contact with the patient to be vaccinated and kept under surveillance for 14 days, the quarantine of the infected premises to be enforced until desquamation of the patient had entirely ceased; the premises were then to be disinfected, using four pounds of sulphur to the thousand cubic feet of air space, the crevices in the doors and windows to be closed by pasting strips of papers over



Figures 1 and 2







Figure 2



Figure 3

An illustration of a case of average severity, at the eighth day of eruption. Many were much less pronounced so far as the amount of eruption is concerned.





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On November 4th I drove to Conesus. Here I saw four cases of well-developed smallpox, one being of the confluent type. They were all thoroughly quarantined. I met the members of the board of education, and it was determined to allow no pupils to attend school who did not present evidence of efficient vaccination.

From Conesus I drove to Livonia. I called on the health officer and urged the necessity of the rigid enforcement of the vaccination law.

On November 5th I visited Groveland and Dansville. I found here the same laxity on the part of school trustees with regard to the enforcement of the vaccination law.

On November 7th I revisited Belfast. I found that two new cases had developed, the infection having been derived from the case in the hotel. These had been promptly removed to the pest house and the infected premises disinfected. All the school children had been vaccinated, and quite a general vaccination was in progress among the adult population. The method adopted in Belfast of combatting the disease I considered very efficient.

I drove from Belfast to Allen, where I found three cases of smallpox, the infection being derived from exposure to the Belfast case. I met the health officer and advised him as to the manner of dealing with the disease.

On November 8th I drove to Perry, Wyoming and Moscow on reports of suspicious cases in the vicinity of these villages. The rumors had no foundation. I urged on the health officers the importance of paying attention to the school vaccinations.

On November 9th I visited Caneadea. I found three cases of smallpox, all properly quarantined. The vaccination law had been enforced in the schools.

From Caneadea I drove to Filmore. I met the health officer and advised him as to the proper method of dealing with a case that might develop in the village, and urged upon him importance of giving due attention to the enforcement of school vaccination law.

On November 10th I visited Cuba. I met the members of the local board of health, and discussed with them the proper measures to be enforced to prevent the development of smallpox in the town, laying particular stress on the value of vaccination as a prophylactic measure.

On November 12th I went to Cortland at the suggestion of Dr Smelzer, a case having been reported from that village. I visited the patient and confirmed the diagnosis of smallpox. I met the health officers and advised them as to the proper method of dealing with the disease. I found that no serious effort had been made to enforce the vaccination law in the schools.

On November 14th I drove to Chicago, where a case of suspicious eruptive disease had been reported. The disease proved to have been urticaria.

In the evening I attended a meeting of the Cortland board of education and advised the board as to the manner of enforcing the vaccination law.

On November 15th I visited Groton, where some suspicious cases had been reported. I found no grounds for the rumors.

From Groton I drove to West Dryden and Etna. Looking into the subject of school vaccination in the latter places, I found that no effort had ever been made to enforce the vaccination law. I urged the imperative importance of giving attention to this matter.

I left Cortland on the night train for Cuba to investigate the character of a suspicious eruptive disease which had developed there.

On November 16th I examined the cases in Cuba and pronounced them smallpox. I met the local board of health and advised them as to the proper method of dealing with the disease.

I returned to Albany on the night train.

On November 29th I revisited Cuba, and as desquamation of the smallpox cases had ceased I suggested that the premises be disinfected and the quarantine raised.

On November 30th I revisited Belfast. Here I found all of the cases well on the road to recovery.

I drove from Belfast to Allen, where two new cases had developed in the premises previously infected.

I drove from Allen to Caneadea. All the cases there were on the road to recovery.

From Caneadea I returned to Rochester.

On December 6th I revisited McLean. I found that a new case had developed. The case was of a severe confluent type. The infection had been derived from one of the mild cases in McLean.

On December 8th I again visited McLean. No new cases had developed.

On December 12th I left Ithaca for DeRuyter. Here I found all the cases had recovered. The vaccination law had been enforced in the schools, and most of the adult population had been vaccinated.

On December 13th I returned to Albany.

On December 16th I left Albany for Dryden to examine a case of eruptive disease which had been reported. It proved to be chickenpox. I met the members of the board of education, and at my suggestion it was determined to give notice to the parents of pupils in the schools that the children would have to submit evidence of efficient vaccination or be excluded from the school.

I returned to Elmira, where I visited the health officer. He reported that all the cases in Elmira had recovered.

On the 18th I returned to Albany.

On the 19th I left Albany for Almond to see a case of suspicious eruptive disease.

On the 20th I saw the case in Almond and diagnosticated it as one of smallpox. I met the local health officer and advised him as to the proper manner of dealing with the case.

I returned to Albany on the 21st.

In closing this report, I wish to call attention to the culpable laxity displayed by school trustees and members of boards of education in the small towns and villages with regard to the enforcement of the school vaccination law. As the result of a

circular letter issued by Dr. Smelzer to the educational officers, agitating this question, a great deal of vaccination has been done during the past month. In very few places, however, has the law been rigidly enforced. I consider this a matter of the greatest importance at the present time, and an effort should be made to compel the school authorities to enforce the law literally.

Very respectfully,

M. G. FRANGHIODI

SANITARY CONDITION OF THE STATE

AND

SUMMARY OF MORTALITY REPORTED DURING

THE YEAR

Sanitary Condition of the State and Summary of Mortality Reported during the Year

BY F. C. CURTIS, M. D.

The number of deaths reported during the year ending November 30, was 120,972, in addition to which 745 were reported after the issue of the monthly bulletin. Estimating the population at 6,800,000, the death rate for the year was 17.65 per 1000 population.

In 1897 the estimated death rate was 18.00; in 1896, 18.50; in 1895, 18.60. There were 2000 more deaths than in 1897.

Returns have been received from every one of the 1500 health districts of the state, except from five towns of populations of about 1500; the returns are therefore fairly complete.

The mortality represents an average longevity of 55.3 years, against one of 54.3 for the 10 years preceding.

As compared with preceding years, the following table shows the deaths reported in the monthly bulletin, for 10 years including the present year. The total number of deaths and the prominent causes of death as they have occurred year by year are presented. Returns of deaths received after the issue of each bulletin are not included in the table.

Totals of mortality, classified by causes, for 10 years, 1889-1898, as published in the Monthly bulletin

YEARS	Total number of deaths	Representing average daily death rate of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever	Malarial disease	Bubonic	Scarlet fever	Measles	Erysipelas	Whooping cough
1889.....	104,823	200	40,813	39.0	206.0	402	1,650	746	30	2,107	890	361	1,909
1890.....	116,880	230	37,399	31.6	196.0	474	1,618	728	4	913	1,61	318	1,195
1891.....	122,678	240	48,740	39.7	176.0	808	1,606	619	4	2,254	1,370	277	885
1892.....	126,369	245	48,434	38.3	183.0	649	1,664	613	143	2,177	1,350	477	901
1893.....	128,008	240	47,643	37.2	180.0	376	1,685	498	258	1,625	769	365	1,909
1894.....	118,195	224	41,472	34.7	180.5	469	1,640	428	306	1,237	900	361	1,083
1895.....	121,725	238	42,006	34.5	166.5	546	1,716	419	11	680	1,308	370	1,169
1896.....	120,653	230	40,136	33.3	164.0	510	1,542	449	3	739	1,405	340	936
1897.....	117,078	231	38,771	33.1	140.0	538	1,361	380	37	641	672	308	885
1898.....	120,678	231	37,113	30.8	138.1	695	1,810	464	1	637	683	227	1,155

STATE BOARD OF HEALTH

Table of mortality, classified by causes, etc.—(Concluded)

YEARS	Croup and diphtheria	Farrietal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Of age	Unclassified
1889	8,853	8,294	15,833	12,950	979	6,501	5,733	6,586	11,863	2,488	3,384	5,090	12,615
1890	4,915	8,468	18,053	12,531	925	7,856	5,689	7,806	11,933	2,693	4,542	5,494	18,788
1891	5,079	9,179	20,637	13,416	1,043	8,485	6,478	8,480	12,126	2,088	5,028	6,530	15,361
1892	5,918	9,183	20,459	13,471	1,131	8,950	6,802	9,013	14,000	3,152	5,548	6,385	14,847
1893	5,947	9,056	19,807	13,193	1,084	8,834	6,905	9,042	13,886	3,263	5,316	6,886	14,832
1894	6,592	8,954	15,861	12,834	911	8,745	6,947	8,431	12,948	3,308	5,487	5,477	15,310
1895	4,099	9,053	17,725	12,357	939	8,893	7,419	9,966	11,794	3,354	5,890	5,599	16,380
1896	4,597	8,773	16,840	12,365	672	8,935	7,770	10,490	11,925	3,799	7,023	5,377	14,685
1897	4,115	7,367	16,277	12,641	1,013	8,963	7,556	10,905	12,194	4,131	6,172	5,616	16,950
1898	3,613	8,406	16,320	12,979	982	10,101	8,611	10,511	12,318	4,868	6,630	5,584	14,641

THE SANITARY DISTRICTS—COMPARATIVE MORTALITY

The eight sanitary districts into which for the purposes of this statistical classification the state has been divided are known as the Maritime (or Metropolitan), the Hudson valley, the Adirondack and Northern, the Mohawk valley, the Southern tier, the East Central, the West Central, and the Lake Ontario and Western districts, whose boundaries are suggested by their names and are elsewhere described.

In publishing the Monthly bulletin the cities and more populous villages or large towns are selected for designation separately and the remainder of the district, called in the bulletin "Rest of district," and consisting of the more rural portion of it, is reported under the one head. At a point later in this report these bulletins for the year are printed in detail.

The present populations of the cities and towns of the state are based mainly on local estimates, reached with such care as is possible and based upon police, school or directory censuses, increase or decrease of territory and of manufacturing establishments and increments from past census enumerations; this seems as accurate as it is possible to make them by perhaps more scientific methods of determining change in population, which if based only on computations from past census returns fail to take account of certain changes to which our growing cities are subject, such as increase in area, of business enterprises, etc.

The following tabulation serves approximately to show the comparative populations and sorts of population in the districts:

Relative area and density of population of the sanitary districts

SANITARY DISTRICTS	Area in square miles	ESTIMATED POPULATION OF—			Population per square mile	Percent age of city population
		Entire district	Specified localities	"Rest of district"		
Maritime	2,266	1,715,000	3,625,000	90,000	1,615	98.0
Hudson valley	5,772	648,197	413,487	274,650	117	46.0
Adirondack and Northern ...	15,080	886,347	105,292	241,654	26	7.5
Mohawk valley	4,781	309,000	108,121	191,836	82	31.0
Southern tier	6,545	407,112	159,000	249,121	62	30.0
East central	6,555	414,876	186,000	228,874	63	39.0
West central	4,746	311,467	99,471	211,996	66	28.0
Lake Ontario and Western ...	4,378	874,300	643,000	231,288	200	70.0

The comparative mortality in the sanitary districts in early life, from zymotic diseases, from consumption and from acute respiratory diseases is shown by this table:

Relative mortality in the sanitary districts from certain causes

DISTRICTS	Death rate per 1000 population (Annual)	Percentage deaths under 5 years of age	IN EACH 1000 DEATHS FROM ALL CAUSES THERE WERE FROM						
			All symptomatic diseases	Typhoid fever	Scarlet fever	Diphtheria and croup	Diarrheal diseases	Consump- tion	Acute respiratory diseases
Maritime	20.00	37.5	146.50	10.25	10.20	21.20	74.00	115.00	150.00
Hudson valley.....	17.65	22.0	180.50	28.00	2.15	18.50	60.00	115.00	125.00
Adirondack and Northern	14.75	19.0	109.00	23.50	0.50	11.40	60.00	112.00	105.00
Mohawk valley	16.50	20.0	120.00	22.00	1.75	15.00	65.00	106.00	100.00
Southern tier.....	14.00	17.0	115.35	20.50	2.50	13.20	60.00	75.00	100.00
East central.....	16.00	18.5	111.10	21.50	4.00	16.00	54.00	90.00	104.00
West central.....	14.25	15.0	80.25	9.50	1.75	6.00	52.00	90.00	100.00
Lake Ontario and Western.....	15.35	27.5	137.00	21.50	2.50	16.50	90.00	100.00	125.00

The following table shows the relation of urban to rural mortality, taking for comparison (1) the metropolis of the state, (2) the six cities of Buffalo, Rochester, Syracuse, Albany, Troy and Utica, having an estimated population above 50,000, and (3) totals of the rural population of the entire state known as "Rest of district."

	Total population	Death rate per 1000 population (annual)	IN EACH 1000 DEATHS FROM ALL CAUSES THERE WERE FROM—						
			All zymotic diseases	Typhoid fever	Scarlet fever	Diphtheria and croup	Diarrheal diseases	Consump- tion	Acute respiratory diseases
City of New York	3,438,899	19.35	153.00	10.50	10.00	26.50	73.50	116.50	151.50
Six large cities.....	875,000	15.00	150.00	26.50	4.00	21.50	84.50	111.00	123.00
Rest of district"	1,758,000	14.00	100.00	16.00	1.00	10.20	40.00	85.00	110.00

INFLUENCE OF SEASON

We are aware that season affects the prevalence of certain diseases, as shown by a study of the monthly issues of the bulletin. The issues of each month for the past ten years are given.

MORTALITY OF THE MONTHS

MONTHS	Total number of deaths	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal fever	Typhoid fever	Malarial diseases	Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough
January:												
1886	6,747	2,434	36.3	161.11	85	66	53	8	188	80	84	192
1887	7,071	2,842	40.2	162.81	61	79	65	21	101	847	80	57
1888	6,743	2,845	42.5	176.75	87	64	71	21	205	55	35	40
1889	8,867	2,884	32.4	170.82	35	89	61	15	248	164	29	105
1890	13,020	2,527	19.3	89.70	93	117	62	..	93	42	39	114
1891	9,543	2,808	29.0	132.50	47	183	44	1	182	140	90	98
1892	13,460	3,246	24.1	107.00	58	116	83	..	294	80	51	48
1893	10,493	3,056	29.1	137.00	44	120	84	14	237	86	52	94
1894	10,448	3,088	29.5	124.00	58	205	80	34	146	122	85	55
1895	10,980	3,128	28.5	110.40	51	108	80	3	103	34	58	78
1896	10,176	3,064	30.0	139.10	49	158	29	1	113	199	31	73
1897	9,557	2,648	27.7	104.00	42	108	26	..	76	70	23	53
1898	9,632	2,416	25.0	96.50	84	123	26	..	123	111	21	44
February:												
1886	8,288	2,011	24.0	153.00	49	57	68	7	119	7	44	105
1887	6,653	2,499	37.6	199.00	39	57	46	21	79	282	28	39
1888	8,687	2,748	32.0	154.00	44	84	49	10	239	55	39	49
1889	8,183	2,923	35.8	170.00	32	71	80	9	324	188	39	119
1890	9,120	2,870	31.5	115.80	57	94	82	..	96	50	32	92
1891	8,04	2,813	35.0	141.71	41	127	32	..	202	127	28	61
1892	10,755	3,129	29.1	138.44	53	98	51	7	250	80	79	41
1893	9,323	2,774	29.8	126.22	46	101	29	23	198	80	58	121
1894	9,417	2,943	31.2	125.00	43	86	24	52	183	125	41	60
1895	10,771	3,049	28.3	85.40	40	99	9	5	98	44	88	57
1896	9,225	2,892	31.3	116.75	31	121	28	..	110	192	45	52
1897	9,639	2,741	28.0	97.50	29	93	23	..	84	89	26	75
1898	9,212	2,543	27.6	91.50	55	104	22	..	98	84	32	47
March:												
1886	7,918	2,552	32.2	136.67	55	75	74	0	119	21	46	129
1887	7,180	2,551	35.5	211.11	42	72	54	21	98	152	42	48
1888	9,405	2,788	29.0	147.37	49	74	68	35	239	68	48	48
1889	9,447	3,801	40.2	167.50	43	69	47	1	298	150	33	157
1890	9,844	2,772	28.0	117.85	47	72	50	2	90	94	47	110
1891	10,672	3,118	29.2	115.30	63	121	42	..	195	157	50	104
1892	10,976	2,842	25.8	124.69	77	96	27	3	285	114	70	48
1893	12,000	3,419	28.5	12.17	99	115	37	29	221	78	41	166
1894	10,198	3,215	31.5	137.80	52	13	24	47	179	161	46	95
1895	11,879	3,440	29.0	93.00	58	99	23	..	131	99	51	83
1896	11,030	3,205	29.0	108.75	54	103	30	1	76	251	47	77
1897	11,574	3,281	28.3	98.15	55	83	26	2	99	113	45	121
1898	10,300	2,460	23.0	96.25	73	119	23	..	108	144	24	89
April:												
1886	7,181	2,881	40.1	141.01	53	69	75	5	129	82	49	123
1887	7,967	2,443	30.6	126.56	56	56	74	12	112	111	45	80
1888	8,124	2,468	30.0	50.00	75	45	52	40	250	77	34	48
1889	9,078	3,116	34.3	174.20	45	74	61	5	263	148	47	137
1890	9,468	2,628	27.7	121.42	61	78	43	1	78	127	48	77
1891	13,281	3,099	23.3	92.85	67	103	48	1	274	159	42	106
1892	10,500	3,245	30.7	128.20	76	77	40	11	248	161	63	60
1893	11,883	3,389	28.5	111.15	104	111	84	23	199	78	55	133
1894	9,945	3,147	31.6	125.00	65	94	53	51	181	148	19	104
1895	10,545	3,595	33.8	115.70	78	116	32	..	118	139	62	107
1896	10,480	3,246	31.0	111.60	50	87	33	..	81	234	62	68
1897	10,325	2,812	27.3	95.70	55	79	27	2	81	93	41	90
1898	10,000	2,763	27.6	93.26	59	80	26	..	84	126	29	118

FOR TEN YEARS

Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
546	73	1,184	1,008	96	333	327	461	717	142	232	485	673
406	78	1,454	1,007	72	351	305	454	754	178	224	693	812
870	78	1,568	1,049	105	44	413	553	916	213	278	882	715
606	101	1,473	1,041	77	421	424	577	945	194	279	607	896
534	96	1,347	1,001	95	542	553	724	1,107	277	333	633	1,069
489	103	1,751	1,210	81	534	548	737	1,041	220	268	633	1,251
659	94	1,801	1,268	115	646	541	953	1,389	295	362	1,182	1,149
613	141	2,293	1,008	138	568	607	968	1,128	280	339	615	1,243
680	87	2,479	1,230	103	618	664	912	1,164	358	361	707	1,285
547	108	2,578	1,214	81	617	622	915	1,137	290	404	506	1,590
530	127	2,015	1,152	91	614	688	954	959	302	344	464	1,305
476	112	1,769	1,051	83	592	678	964	1,005	323	437	464	1,234
323	113	1,765	1,051	91	642	730	1,073	1,032	346	400	467	1,168
487	70	1,110	946	87	334	347	481	687	157	222	485	555
493	87	1,144	952	86	348	357	443	646	149	204	643	783
667	85	1,644	1,112	103	487	474	563	878	233	233	1,042	674
518	75	1,417	947	100	0	461	574	922	183	235	507	674
538	89	1,950	1,304	74	477	475	586	927	209	264	515	1,099
419	121	1,833	984	107	517	522	672	1,003	205	290	504	1,007
538	89	2,315	1,196	119	620	564	813	1,318	232	340	770	1,347
430	141	1,916	954	132	692	554	770	1,103	218	270	496	1,040
627	89	1,940	1,083	87	578	550	728	1,152	237	293	499	1,175
391	107	2,226	1,181	43	600	670	917	1,135	241	351	598	1,081
444	114	2,012	1,084	100	577	622	879	992	313	368	602	1,151
370	134	1,996	1,117	71	614	628	956	1,071	351	408	495	1,178
375	119	1,732	1,031	75	674	754	763	1,129	369	337	483	1,098
490	76	1,590	1,129	106	395	412	474	853	153	234	660	758
497	624	1,203	664	103	367	377	535	830	192	160	775	857
668	117	1,732	1,218	137	411	422	594	970	204	281	1,060	916
509	115	1,840	1,193	109	408	489	662	1,014	228	237	624	1,092
514	94	1,920	1,184	99	514	471	709	1,151	235	314	680	1,063
413	101	2,347	1,198	119	613	611	711	1,165	283	290	696	1,270
531	108	2,800	1,272	137	648	583	803	1,265	276	323	800	1,192
517	103	2,451	1,226	131	609	695	885	1,396	303	344	680	1,344
546	114	1,814	1,106	110	638	613	780	1,196	262	316	478	1,366
445	117	2,395	1,274	114	691	721	971	1,190	319	417	714	1,399
370	142	2,810	1,409	131	685	744	1,037	1,180	316	414	580	1,050
377	146	2,441	1,190	117	672	737	1,136	1,205	375	441	613	1,331
381	123	1,872	1,168	89	718	610	901	1,251	382	480	511	1,126
380	89	1,188	1,125	90	353	383	463	830	173	151	550	713
479	112	1,341	1,146	130	434	482	512	841	107	283	683	747
448	113	1,932	1,117	90	407	404	549	966	146	265	788	888
550	129	1,626	1,092	125	429	478	574	916	222	311	500	1,059
486	97	1,731	1,139	73	599	484	691	1,045	229	330	460	1,078
370	123	1,357	1,177	92	596	645	869	1,048	271	418	901	1,316
491	131	2,051	1,252	126	606	576	822	1,201	240	410	466	1,233
444	143	2,043	1,191	114	678	637	815	1,413	304	412	572	1,379
371	117	1,748	1,091	85	688	614	741	1,102	278	409	601	1,319
484	115	2,193	1,230	83	666	659	917	1,017	289	433	494	1,325
377	137	2,124	1,189	98	615	641	919	1,080	329	429	471	1,350
360	137	1,893	1,168	98	616	742	970	1,107	375	455	517	1,359
353	137	1,869	1,100	91	671	768	884	1,218	383	485	481	1,400

MORTALITY OF THE MONTHS

MONTHS	Total number of deaths	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro spinal fever	Typhoid fever	Malarial diseases	Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough
January:												
1886	6,747	2,252	33.5	161.11	28	66	58	5	188	80	84	192
1887	7,671	2,822	36.8	168.91	61	72	65	21	101	347	30	67
1888	8,742	2,848	32.5	176.75	87	64	71	21	265	55	86	40
1889	8,837	2,984	33.8	170.82	35	89	51	15	242	164	99	105
1890	18,020	2,227	12.3	89.70	22	117	63	..	93	42	59	114
1891	9,649	2,868	30.0	182.50	47	188	44	1	182	140	70	92
1892	13,482	3,946	29.3	197.00	58	116	38	2	294	80	61	48
1893	10,490	3,056	29.1	187.00	44	180	34	15	227	86	52	94
1894	10,948	3,086	28.2	124.00	53	205	50	34	146	122	86	55
1895	10,980	3,123	28.5	110.40	51	168	50	3	103	84	38	78
1896	10,176	3,081	30.3	129.12	49	158	23	1	113	190	31	78
1897	9,587	2,663	27.7	104.00	42	108	26	..	76	70	28	59
1898	9,632	2,416	25.0	95.50	34	132	26	..	123	119	21	44
February:												
1886	6,268	2,011	32.0	153.00	49	57	66	7	119	7	44	106
1887	6,658	2,439	36.6	189.00	39	57	46	21	79	239	28	39
1888	8,637	2,748	31.8	154.00	44	84	49	10	230	55	39	49
1889	6,184	2,935	47.5	170.00	22	71	30	9	824	186	30	119
1890	9,190	2,570	27.8	148.00	87	94	32	..	96	50	32	92
1891	6,04	2,813	46.5	141.7	41	127	32	..	203	127	18	61
1892	10,755	3,149	29.2	123.44	63	98	23	7	290	89	79	4
1893	9,834	2,774	28.2	136.28	46	101	99	23	198	80	68	121
1894	9,417	2,943	31.2	125.00	42	86	24	62	139	125	41	60
1895	10,771	3,040	28.2	145.40	40	99	9	5	98	44	28	87
1896	9,425	3,659	38.8	116.75	81	121	28	..	110	192	45	62
1897	9,828	2,741	27.9	97.50	22	98	28	..	84	89	26	78
1898	9,213	2,543	27.5	91.50	53	104	22	..	93	64	32	47
March:												
1886	7,918	2,552	32.2	138.67	63	75	78	6	119	21	46	129
1887	7,530	2,551	33.8	211.11	42	72	54	24	98	158	42	48
1888	9,405	2,788	29.6	147.37	49	74	56	35	239	56	48	48
1889	9,447	3,841	40.7	167.50	63	69	47	1	346	150	39	137
1890	9,844	2,772	28.2	117.35	47	72	36	2	90	94	47	110
1891	10,672	3,116	29.2	115.30	63	191	42	..	195	137	60	104
1892	10,678	2,812	26.4	124.69	77	96	47	3	285	114	70	48
1893	14,000	3,419	24.4	12.17	89	115	87	29	221	76	41	166
1894	10,196	3,215	31.5	137.80	68	15	25	47	179	164	46	96
1895	11,879	3,440	29.0	94.00	58	99	23	..	181	90	51	88
1896	11,040	3,255	29.5	103.75	54	103	20	1	76	251	47	77
1897	11,574	3,261	28.2	92.15	55	84	26	2	96	113	45	121
1898	10,300	2,860	27.7	96.25	78	119	21	..	108	144	24	89
April:												
1886	7,181	2,281	31.8	147.00	63	69	75	9	129	32	49	123
1887	7,967	2,448	30.6	186.36	56	66	71	12	112	11	45	80
1888	8,129	2,408	29.6	50.00	75	45	52	40	250	77	84	46
1889	9,678	3,116	32.2	174.20	45	74	64	2	363	148	47	187
1890	9,488	2,426	25.6	121.42	51	73	43	1	78	147	41	77
1891	11,941	3,449	28.9	92.88	67	104	48	1	273	119	42	103
1892	10,501	3,245	30.9	128.20	76	77	40	11	248	107	68	60
1893	11,485	3,338	29.0	111.14	101	111	34	23	190	78	55	133
1894	9,945	3,142	31.5	135.00	65	94	33	51	181	148	19	104
1895	10,547	3,501	33.2	115.70	78	115	32	..	118	133	62	107
1896	10,480	3,246	31.0	111.04	50	87	33	..	61	234	62	88
1897	10,385	2,814	27.3	95.40	55	79	27	2	81	14	44	90
1898	10,000	2,768	27.8	98.25	89	80	28	..	84	126	29	118

FOR TEN YEARS -- (Continued)

Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
394	129	635	1,000	73	355	863	444	711	166	331	445	660
540	143	1,096	1,039	71	379	878	445	870	191	356	714	614
687	131	1,468	1,000	98	458	481	570	1,809	211	370	788	966
492	143	1,172	1,102	50	511	481	599	297	277	343	438	1,061
439	143	1,588	1,077	95	539	508	691	999	278	371	438	1,534
389	127	2,123	1,234	114	561	561	741	1,061	345	434	689	1,849
489	113	1,972	1,307	109	617	610	736	1,159	276	461	443	1,180
489	176	1,944	1,239	60	660	664	834	1,237	544	608	608	1,834
585	190	1,333	1,088	93	644	677	745	1,056	265	555	400	1,371
590	137	1,459	1,149	83	628	677	903	1,082	270	478	449	1,250
591	505	1,474	1,193	84	647	614	852	1,086	326	555	400	1,185
565	112	1,357	1,054	80	637	716	935	1,001	338	478	449	1,311
523	137	1,576	1,147	84	695	757	915	1,171	375	478	449	1,198
390	405	626	911	74	382	323	470	714	188	398	397	708
475	597	587	948	56	516	404	458	784	190	362	397	606
496	811	776	868	91	516	398	491	2,075	237	411	414	1,130
423	1,112	744	919	77	639	386	485	851	228	376	414	1,153
554	1,087	972	984	83	679	497	541	1,630	237	452	347	1,433
519	806	1,098	978	108	740	473	678	1,147	234	594	363	1,356
509	676	1,060	1,005	99	692	449	698	1,132	245	545	363	1,080
559	478	1,010	1,065	67	612	505	679	1,108	240	560	354	1,073
575	739	1,087	992	84	723	553	715	1,180	307	598	363	1,334
538	637	825	974	63	665	592	713	947	230	551	367	1,186
562	915	877	1,097	69	793	625	782	1,047	230	551	367	1,306
554	503	945	1,012	83	781	648	884	1,037	325	590	362	1,178
174	372	657	1,007	96	788	656	789	1,031	367	581	361	1,069
584	2,096	541	949	56	646	357	449	967	168	373	450	990
375	3,609	477	956	90	738	406	429	1,259	227	499	739	1,185
411	2,957	588	966	73	784	393	494	930	210	397	484	1,111
305	3,092	587	1,012	63	814	442	542	1,089	227	357	508	1,294
293	2,916	706	1,073	60	1,024	497	543	1,092	242	363	595	1,718
304	2,940	717	1,032	67	1,036	502	628	1,158	239	363	563	1,897
349	3,829	801	1,093	96	1,064	556	700	1,648	266	642	447	1,603
379	3,306	745	1,073	72	1,219	552	799	1,254	300	598	368	1,603
470	3,256	688	1,094	64	1,184	587	638	1,282	300	598	368	1,603
323	2,974	627	1,040	83	1,135	599	739	1,000	323	598	368	1,426
293	3,066	785	1,050	72	1,267	661	843	1,109	349	649	410	1,541
258	3,395	698	991	92	1,117	564	604	1,090	323	750	410	1,388
150	2,298	710	1,116	67	1,244	646	793	1,118	390	762	410	1,370
507	1,484	480	861	68	528	320	442	657	153	354	458	798
308	2,128	457	930	67	603	301	442	938	199	354	731	966
345	2,465	526	989	74	647	402	473	1,010	227	370	477	1,245
337	1,901	591	1,026	63	690	437	540	938	254	378	477	1,198
333	2,193	666	1,064	70	871	442	537	1,125	236	512	375	1,749
266	2,405	675	1,041	87	983	490	612	1,133	257	617	477	1,235
275	2,328	704	1,056	78	985	519	608	1,208	257	573	399	1,301
328	2,406	661	1,040	13	966	534	676	1,157	268	600	482	1,314
333	2,063	621	1,031	71	945	573	626	1,011	295	543	465	1,331
305	2,803	668	1,051	67	1,027	523	741	1,084	357	597	457	1,404
337	2,336	636	1,059	89	1,062	644	808	1,113	294	597	508	1,518
249	1,799	597	1,027	92	1,028	617	803	876	387	600	387	1,311
124	2,345	613	1,019	67	1,288	646	749	1,063	390	700	410	1,349

MORTALITY OF THE MONTHS

MONTHS	Total number of deaths	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro spinal fever	Typhoid fever	Malarial diseases	Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough
September :												
1886	7,389	3,206	44.3	273.86	42	176	74		86	26	19	100
1887	8,367	3,218	39.0	261.16	38	248	141	10	83	16	11	44
1888	8,438	3,877	45.9	294.82	31	279	102	12	114	43	11	142
1889	6,264	3,179	50.4	238.26	19	247	98	2	53	9	14	90
1890	9,111	3,356	39.0	224.45	30	234	84		40	29	15	109
1891	9,662	3,984	41.2	247.04	50	287	82		99	21	13	60
1892	9,610	3,787	39.4	235.90	48	280	74	9	78	37	16	93
1893	9,346	3,718	39.6	248.65	29	227	68	23	84	24	11	83
1894	9,525	3,949	41.5	244.00	28	229	51	9	83	15	11	102
1895	13,011	4,161	31.9	250.00	52	220	50		96	36	15	119
1896	9,487	3,396	36.0	197.60	44	221	65		26	81	11	102
1897	9,488	3,432	35.5	188.5	51	157	34		31	19	12	76
1898	11,481	4,828	42.5	230.00	37	283	82		20	20	6	120
October :												
1886	7,370	2,730	37.0	229.90	32	194	118	2	51	63	17	88
1887	7,370	2,817	38.1	201.63	38	182	104	4	113	16	13	14
1888	7,846	2,622	32.5	196.37	34	288	109	12	125	43	19	109
1889	6,050	2,286	38.4	177.00	21	261	87		57	7	13	70
1890	8,240	2,685	32.7	155.00	26	240	87		62	4	6	84
1891	9,778	3,454	35.5	200.00	47	290	70		118	16	14	54
1892	9,092	2,804	31.8	174.79	35	265	72	27	96	26	18	79
1893	8,981	2,904	33.4	185.00	56	253	50	10	65	14	16	66
1894	9,098	2,936	32.5	184.06	22	234	46	5	82	15	6	72
1895	9,320	2,911	31.5	177.00	36	265	50	3	86	18	13	95
1896	8,678	2,411	28.2	139.16	27	195	57		35	37	12	87
1897	9,180	2,685	29.4	148.25	30	173	44		49	32	5	69
1898	9,632	2,668	28.0	143.00	37	28	49		38	10	14	59
November :												
1886	6,872	2,423	35.2	218.33	47	167	98	1	68	185	18	49
1887	7,943	2,171	29.7	200.00	20	149	80	4	130	30	25	29
1888	6,987	2,111	30.2	174.88	11	158	81	8	171	62	16	90
1889	7,245	2,025	27.7	139.00	21	169	63		54	25	21	55
1890	8,209	2,700	32.5	146.00	29	210	67		102	74	17	69
1891	8,727	2,528	29.0	151.06	30	241	61	2	179	31	26	31
1892	8,448	2,540	30.1	187.10	30	184	50	18	127	51	20	77
1893	8,458	3,324	39.5	177.00	45	180	30	27	77	56	14	50
1894	8,146	2,254	27.6	151.85	25	169	30	10	62	15	17	63
1895	8,372	2,287	27.4	134.64	24	204	43		51	94	18	57
1896	7,888	2,105	27.5	113.35	25	32	31		48	47	18	44
1897	8,325	2,045	24.5	108.65	31	151	28		62	63	12	27
1898	6,709	1,970	29.2	90.00	36	189	30	1	32	18	17	52
December :												
1886	7,603	2,808	37.3	200.00	50	112	85	5	69	333	42	49
1887	7,886	2,497	31.6	90.00	34	104	78	12	204	44	35	21
1888	8,369	2,495	29.8	179.00	28	138	49	13	279	118	39	113
1889	8,483	2,811	33.0	126.35	38	117	63		73	33	22	84
1890	8,761	2,635	30.0	135.88	30	167	59		144	117	36	71
1891	11,211	3,023	26.9	133.43	32	183	47		236	78	32	41
1892	9,524	2,754	28.9	146.41	24	147	40	17	195	32	32	82
1893	10,600	2,834	26.7	117.25	40	158	27	35	106	70	25	73
1894	9,000	2,567	28.5	133.00	33	139	35	11	82	35	34	63
1895	9,438	2,711	28.5	134.00	31	169	34		75	172	34	72
1896	9,074	2,378	26.0	112.50	28	126	30		68	50	20	69
1897	9,160	2,196	25.0	97.15	38	160	20		91	61	26	43
1898	10,877	2,369	21.8	70.00	35	156	22		53	36	18	69

FOR TEN YEARS — (Concluded)

Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of the circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
323	1,186	497	919	61	563	552	390	674	163	298	474	■
550	1,009	697	989	45	532	552	■	722	222	331	765	550
303	1,440	849	826	69	600	843	494	826	194	303	60	996
242	1,084	846	946	65	689	794	453	870	200	396	446	872
847	1,106	710	1,027	47	768	418	530	871	236	375	450	1,712
334	1,434	790	1,089	65	924	479	596	907	230	440	431	1,908
373	1,268	834	1,010	69	877	502	489	898	260	469	481	1,306
411	1,395	713	912	68	863	528	697	1,085	268	413	891	1,291
389	1,454	668	968	54	859	492	612	979	269	428	899	1,413
332	1,672	876	1,009	63	923	577	703	913	277	522	433	1,908
294	1,077	823	1,028	67	848	566	810	906	■	543	417	1,306
259	1,171	736	998	70	919	602	895	913	327	651	421	1,317
136	1,579	768	1,076	70	1,163	647	866	1,116	374	927	473	1,363
518	420	845	965	50	497	366	409	592	193	■	■	835
707	297	853	943	53	458	367	475	759	307	309	717	■
432	386	1,081	1,084	70	518	392	496	701	242	273	513	964
570	339	950	1,016	■	557	431	596	890	334	348	491	1,032
332	260	1,001	1,061	71	635	485	697	841	238	366	470	1,538
527	794	1,012	1,124	60	638	558	695	1,083	250	■	494	1,281
531	49	1,122	992	62	709	547	804	1,094	263	448	490	1,196
599	533	947	1,070	58	771	512	658	1,010	273	422	■	1,306
561	635	901	1,013	54	757	510	690	959	291	452	477	1,249
458	554	749	1,112	67	761	630	787	840	319	511	445	1,564
361	838	1,123	990	70	619	605	906	815	323	435	487	1,182
370	447	1,090	1,070	79	717	609	830	911	358	668	487	1,306
180	687	1,044	1,032	65	943	673	848	1,015	378	516	443	1,299
673	166	1,056	982	70	828	361	448	576	166	264	494	661
844	117	1,041	904	67	870	375	490	709	178	301	718	640
538	112	1,051	893	68	414	391	532	795	164	300	■	796
501	110	1,123	944	67	450	452	599	822	199	311	419	868
467	124	1,207	1,019	74	518	435	554	651	208	387	409	■
567	143	1,607	1,017	65	583	501	656	967	237	404	487	1,083
697	137	1,445	940	55	592	490	674	■	944	877	382	1,008
706	132	1,242	967	57	595	539	891	925	242	411	■	1,009
501	146	1,180	1,090	48	566	515	661	890	263	383	392	991
481	150	1,348	979	71	583	584	750	795	263	473	570	1,027
429	132	1,154	870	66	524	599	828	772	330	413	356	1,017
399	191	1,153	977	76	605	687	867	841	306	439	418	1,075
242	165	1,238	1,049	54	625	631	918	998	320	450	451	1,027
664	107	1,427	1,047	68	333	376	474	781	167	233	537	644
633	78	1,406	1,023	75	441	406	543	785	206	295	761	686
621	87	1,322	1,017	95	494	461	564	917	232	345	577	817
546	110	1,635	1,127	83	468	466	656	950	238	298	455	1,016
497	80	1,756	1,045	85	533	488	843	1,300	217	285	454	1,029
725	115	2,731	1,090	100	646	568	801	1,183	296	416	782	1,153
673	113	1,797	1,145	78	575	572	779	1,132	250	464	416	1,036
678	123	2,445	1,099	80	581	610	792	1,078	254	359	724	1,237
679	103	1,655	1,117	86	551	629	719	1,033	269	284	401	1,063
563	115	1,741	1,064	79	596	609	931	866	306	510	399	1,083
520	127	1,454	1,082	86	604	673	899	927	330	415	443	1,096
535	121	1,641	1,056	61	610	679	952	981	344	427	501	1,118
244	141	2,250	1,156	71	657	845	1,091	1,177	364	479	■	1,426

MORTALITY OF THE MONTHS

MONTHS	Total number of deaths	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro spinal fever	Typhoid fever	Malarial diseases	Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough
September												
1886	7,989	3,206	40.1	272.68	42	176	74	10	36	25	19	100
1887	8,267	3,218	39.0	261.13	38	248	141	23	33	16	11	44
1888	8,434	3,877	45.9	294.32	31	279	102	12	114	43	11	143
1889	8,264	3,179	38.4	238.26	19	247	98	2	53	9	14	90
1890	9,111	3,356	36.8	234.45	30	234	84	2	40	29	15	102
1891	9,662	3,084	31.9	247.04	59	287	88	2	29	21	13	60
1892	9,610	3,787	39.4	235.00	42	280	74	9	78	37	16	93
1893	9,846	3,718	37.8	248.65	29	297	68	23	44	24	11	65
1894	9,525	3,648	38.3	244.00	28	323	61	23	33	15	11	108
1895	10,011	4,421	44.1	250.00	52	220	50	2	26	36	15	119
1896	9,487	3,399	35.8	197.60	44	221	65	2	28	31	11	102
1897	9,788	3,493	35.7	198.75	51	157	34	2	31	19	12	76
1898	11,481	4,828	42.1	230.00	47	383	82	2	26	20	6	120
October												
1886	7,370	2,730	37.0	236.20	33	104	118	2	51	58	17	68
1887	7,370	2,717	36.7	201.63	33	152	104	4	113	15	18	14
1888	7,886	2,522	32.0	186.37	39	288	109	12	125	43	19	102
1889	8,080	2,284	28.1	177.00	21	201	87	2	57	7	13	70
1890	8,640	2,965	34.3	155.00	26	240	97	2	62	4	6	94
1891	9,778	3,454	35.3	200.00	47	290	70	27	118	36	14	54
1892	9,702	2,891	29.7	174.72	35	206	72	27	96	26	18	78
1893	8,881	2,994	33.7	145.00	56	253	59	19	65	14	14	66
1894	9,278	2,906	31.3	181.00	22	234	46	5	32	15	6	72
1895	9,320	2,361	25.3	167.00	36	265	50	2	36	36	13	95
1896	8,676	2,471	28.4	191.15	27	195	57	2	35	37	12	67
1897	9,080	2,653	29.2	178.25	30	173	44	2	49	39	5	59
1898	9,632	2,868	30.0	140.00	37	25	49	2	33	10	22	59
November												
1886	6,872	2,423	35.2	213.33	47	157	98	1	68	185	18	49
1887	7,292	2,171	29.7	200.00	29	149	80	4	130	35	25	29
1888	6,987	2,111	30.2	174.88	21	153	61	8	171	82	16	90
1889	7,286	2,025	27.8	159.60	21	169	69	2	56	25	21	55
1890	8,299	2,199	26.5	146.00	29	216	65	2	102	74	17	69
1891	8,727	2,528	29.0	151.00	30	241	61	2	179	31	26	31
1892	8,118	2,540	31.3	167.19	39	184	60	18	127	61	26	77
1893	8,458	2,224	26.4	155.00	45	189	50	27	77	66	14	50
1894	8,148	2,254	27.6	161.85	25	189	50	10	52	15	17	53
1895	6,372	2,287	35.9	134.62	24	204	43	2	81	96	18	67
1896	7,888	2,165	27.3	119.35	25	82	21	2	48	47	19	44
1897	8,925	2,045	22.9	108.83	8	151	28	2	62	69	12	27
1898	8,709	1,971	22.6	90.00	36	169	30	1	32	14	17	52
December												
1886	7,808	2,808	35.9	200.00	50	112	85	5	69	338	43	69
1887	7,846	2,607	33.2	90.50	34	104	78	12	204	44	35	21
1888	8,369	2,495	29.8	179.00	28	139	49	19	276	198	33	113
1889	8,483	2,311	27.2	126.35	38	117	63	2	78	93	22	84
1890	8,761	2,035	23.2	135.28	30	157	59	2	144	117	36	71
1891	11,241	2,928	26.1	133.45	32	189	7	2	246	78	33	41
1892	9,528	2,754	28.9	146.41	24	147	40	17	195	89	22	82
1893	10,000	2,884	28.8	127.25	46	158	27	35	106	70	25	73
1894	9,000	2,507	27.8	138.00	23	139	35	21	88	85	34	58
1895	9,488	2,771	29.2	134.00	31	169	34	2	75	172	34	72
1896	9,074	2,378	26.2	112.50	28	126	30	2	68	50	20	59
1897	9,160	2,195	23.9	97.15	28	160	20	2	91	61	26	50
1898	10,877	2,209	20.3	70.00	35	156	29	2	53	36	18	50

FOR TEN YEARS — (Concluded)

Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of the circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
283	1,186	497	919	51	588	352	386	674	165	298	474	843
559	1,009	697	969	45	582	358	508	722	232	331	765	959
808	1,440	649	895	■	■	343	494	895	198	303	5 0	986
343	1,094	645	946	65	638	794	493	570	306	336	446	672
247	1,196	710	1,027	47	768	■	580	671	936	875	420	1,712
234	1,434	720	1,030	65	924	479	596	997	389	449	421	1,398
372	1,266	834	1,010	69	877	502	639	898	280	460	461	1,306
411	1,895	718	912	68	863	525	697	1,089	268	418	391	1,221
389	1,454	668	968	54	859	492	612	976	269	458	399	1,413
332	1,672	675	1,023	63	925	577	708	9-8	277	522	453	1,306
294	1,077	823	1,023	57	848	556	810	906	304	542	417	1,305
259	1,171	785	908	70	919	602	835	918	327	651	421	1,217
125	1,873	766	1,076	70	1,169	647	866	1,116	378	937	473	1,363
618	492	545	985	50	497	366	409	692	193	294	549	835
707	897	853	942	53	458	367	475	769	207	309	717	743
432	396	1,081	1,034	70	518	393	495	791	212	278	512	964
570	339	959	1,016	64	557	431	696	899	238	342	■	1,022
363	260	1,001	1,001	71	635	495	597	8-4	239	366	470	1,588
527	794	1,012	1,124	60	832	358	695	1,028	250	430	494	1,391
531	491	1,132	996	62	709	547	694	1,034	263	448	420	1,196
590	532	947	1,070	58	771	542	■	1,010	278	423	363	1,306
651	635	901	1,018	54	757	510	690	950	294	452	477	1,349
458	554	749	1,112	67	761	630	767	840	319	511	445	1,564
361	882	1,123	990	70	6-9	605	908	815	322	455	437	1,122
870	447	1,090	1,070	79	717	604	890	911	358	568	437	1,305
180	637	1,044	1,032	65	948	673	848	1,015	378	5-6	443	1,293
675	166	1,056	982	70	828	361	448	576	156	254	494	661
944	117	1,041	964	■	379	375	490	708	178	301	718	649
538	112	1,051	898	58	414	394	522	■	164	200	443	726
601	110	1,133	944	67	450	452	■	822	199	311	419	868
467	124	1,207	1,019	74	518	435	554	851	216	387	409	1,388
567	148	1,307	1,017	65	593	501	555	967	237	404	427	1,083
697	137	1,445	940	55	532	■	674	845	244	377	238	1,008
706	122	1,242	967	67	595	529	691	925	242	411	469	1,009
701	146	1,180	1,080	48	566	575	661	890	232	323	392	991
483	180	1,348	979	71	543	584	750	708	203	473	370	1,027
429	122	1,154	876	66	534	599	828	772	231	448	366	1,017
339	191	1,153	977	78	605	667	867	841	308	442	418	1,075
242	105	1,288	1,049	54	625	681	918	908	380	450	451	1,027
624	197	1,427	1,047	63	338	376	474	781	167	283	537	644
833	76	1,205	1,082	75	441	406	543	783	208	295	761	636
■	87	1,322	1,017	95	434	461	584	917	232	345	577	617
545	110	1,615	1,127	88	463	466	856	950	238	268	455	1,016
407	80	1,766	1,045	85	333	393	643	1,000	2-7	265	484	1,089
723	115	2,731	1,000	100	616	598	801	1,193	296	416	782	1,153
673	118	1,737	1,145	73	575	679	779	1,132	259	464	416	1,090
678	123	2,445	1,099	80	581	610	792	1,078	254	359	734	1,237
672	138	1,855	1,117	68	551	625	7-9	1,033	269	284	401	1,063
863	116	1,741	1,064	19	190	600	■	866	305	510	299	1,111
530	127	1,454	1,062	68	604	674	899	927	331	415	442	1,096
235	121	1,541	1,056	61	610	679	832	881	344	427	501	1,115
241	141	2,230	1,185	71	637	845	1,091	1,177	363	479	568	1,485

Dividing the year into seasons, there is exhibited in the following tables the actual mortality from the different groups of diseases as they have occurred in these periods:

Zymotic mortality for 1898 by seasons

SEASONS	Average daily mortality from all causes	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever	Malarial diseases	Smallpox	Scarlet fever	Measles	Kryosipolis	Whooping cough	Croup and diphtheria	Gastro-intestinal diseases
Winter months.....	111	25.0	94.50	115	308	69	.....	307	182	60	134	385	553
Spring months.....	338	27.7	94.35	325	935	73	.....	305	373	102	319	766	137
Summer months.....	241	29.0	93.90	317	340	95	.....	167	177	45	453	467	6015
Autumn months.....	533	30.7	155.00	180	303	161	1	98	48	35	381	157	7734

Mortality for consumption and local diseases by seasons

SEASONS	Consumption	Acute respiratory diseases	Puerperal diseases	Diseases of digestive system (not diphtheria)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
Winter months.....	4418	5012	181	9038	1008	8686	8812	2411	1184	1481	3396
Spring months.....	3148	3517	108	5102	804	3800	5440	1081	1543	1461	2078
Summer months.....	3116	3180	88	5025	844	3888	5011	1217	2048	1370	2638
Autumn months.....	3818	4044	285	1881	1118	3875	5812	2487	1801	1571	3681

THE ZYMOTIC MORTALITY

The following table shows the comparative zymotic mortality and the relative mortality in early life (under the age of five years) to the total number of deaths from all causes, for 1898 and the 10 years preceding:

YEARS	Average daily mortality from zymotic diseases	Zymotic deaths per 1,000 deaths from all causes	Zymotic deaths per 100,000 population	Percentage of deaths under 5 years of age
1888	63	220.75	333	36.6
1889	66	227.75	353	36.6
1890	54	175.00	314	31.5
1891	57	173.75	343	34.5
1892	64	181.00	357	33.6
1893	61	182.00	339	33.6
1894	60	183.00	335	35.0
1895	61	184.00	340	34.5
1896	53	160.00	300	34.5
1897	48	145.00	260	30.5
1898	40	140.00	245	31.0

The following table shows the number of deaths yearly from each of the zymotic diseases from 1888 to 1898:

Zymotic deaths from 1888 to 1898

YEARS	Cerebro-spinal meningitis	Typhoid fever	Malarial diseases	Smallpox	Scarlet fever	Measles	Krymples	Whooping cough	Croup and diphtheria	Marthian diseases
1888	400	1,440	643	211	2,378	680	244	908	6,710	8,705
1889	298	1,871	763	48	2,818	1,004	204	1,323	6,980	8,971
1890	402	1,878	783	4	2,888	1,077	286	1,188	4,954	6,485
1891	667	1,800	631	4	2,173	1,269	270	685	4,844	9,103
1892	667	1,700	680	185	2,843	1,346	488	680	5,970	9,157
1893	853	1,674	806	224	1,715	801	268	1,812	6,942	8,046
1894	503	1,659	44	230	1,881	985	231	1,010	6,616	9,376
1895	598	1,657	310	31	1,897	1,153	278	1,150	6,096	9,043
1896	513	1,586	433	8	771	1,617	254	1,000	4,640	8,764
1897	541	1,385	400	27	615	868	200	680	4,318	7,980
1898	688	1,814	403	1	875	266	225	1,139	2,703	8,479
Average for the 10 previous years.....	505	1,613	565	108	1,840	1,083	252	1,088	5,500	8,803

EPIDEMIC INFLUENZA (GRIPPE)

This belongs among the zymotic diseases, but its prevalence and mortality is largely a matter of inference and it is not specified in the group. It has prevailed as an epidemic since December, 1888, when the first of the present series of annual epidemics commenced, and it has effected an increase in the mortality during the time of its prevalence which has found expression chiefly in acute respiratory diseases, and to a less degree in nervous and digestive diseases. The degree to which these and the general mortality have been influenced is the basis for estimate of its mortality. The 1898 epidemic begun in December, 1897 and continued for six months—reaching its height in March and April; and caused 2500 deaths; 200 in December, 400 in January, 600 in February, 600 in March, 500 in April and 200 in May.

The following table shows statistics of the series of nine recurrences:

TIME OF OCCURRENCE	Acme reached	Duration	Number of deaths
1889-90.....	January, 1890	Three months	5,000
Spring of 1891.....	April, 1891	Six months	8,000
1891-2.....	January, 1892	Five months	8,000
1892.....	April, 1892	Six months	6,000
1892-4.....	January, 1894	Four months	3,000
1895.....	February, 1895	Four months	5,000
1896.....	March, 1896	Five months	2,750
1897.....	March, 1897	Four months	3,000
1898.....	March, 1898	Six months	2,500

At the close of the year a fresh epidemic had made its appearance, and in the month of December there had already occurred an estimated mortality from epidemic influenza of 1800 deaths.

TYPHOID FEVER

There were 1810 deaths from this cause, which is 200 more than the average; there were 27 deaths per 100,000 population against 20 in 1897. There were 16 deaths per 1000 deaths from all causes, against 14 in 1897. The month of fewest deaths from typhoid fever was June, for the entire state, 70 deaths; and of largest mortality, September, 333 deaths. In the four months,

April to July, there were 325 deaths; in the four months, December to March, 505; and in the four months, August to November, 984; which shows that in the mass typhoid fever is an autumn disease. But the three months, January, February and March, form a period of secondary increase in mortality, and this secondary increase is due to a winter prevalence in certain cities. Typhoid fever is strictly a fall disease in the country; in the rural parts of the state ("Rest of District" representing 1,750,000 population) there were 95 deaths from this cause in January, February and March; in September, October and November there were 151 deaths. The relative prevalence of typhoid fever in the sanitary districts is shown on a preceding page. An unusual amount of prevalence is noted in the Maritime district in the fall months. This does not, however, directly include the mortality from this cause in Camp Wyckoff, on Montauk Point, in the town of East Hampton, on Long Island and in that district, for 79 deaths which have been returned from that place from typhoid fever are not included in our statistics.

But without doubt part of the increased mortality from this cause which came in the autumn months has been due to importation to the state from the army.

DIPHTHERIA

The notable fact regarding this disease has been its extraordinary decrease, the 2612 deaths returned from it being less than half the average yearly mortality. For three years there has been a falling off in the number of deaths from this cause. For eight years, 1888 to 1895, the annual reported mortality was from 5000 to 6700; in 1896 it decreased to 4600; in 1897 to 4300; this year there is the remarkable decrease to 2600.

This table will show the localities in which decrease has been most marked—in a series of five years—will show that it has been universal, but generally most conspicuous in the populous, urban districts. The comparison is made by ratio to the total reported mortality as more absolute than by the estimated populations:

In each 1000 deaths from all causes there were from diphtheria in the —

DISTRICTS	1894	1895	1896	1897	1898
Maritime.....	71.87	51.58	45.00	42.60	21.20
Hudson valley	81.28	28.00	26.75	27.75	18.50
Adirondack and Northern.....	87.78	18.52	27.90	25.10	11.40
Mohawk valley	28.00	11.20	15.10	19.50	15.00
Southern tier	89.50	20.75	15.50	17.50	13.20
East central.....	80.65	13.10	20.65	22.00	16.00
West central.	16.70	14.00	10.00	13.50	6.00
Lake Ontario and Western.....	40.25	40.00	40.00	34.30	16.50
Entire state	55.77	41.00	38.00	35.15	21.50

Evidently there has been a widespread influence which has diminished the prevalence or the severity of diphtheria, since every locality of the state shows this relative decrease as compared with general causes of death, most notably the cities, but also the rural districts, for out of 22,685 deaths occurring in the “Rest of districts” there were but 252 deaths from diphtheria, or about 11.00 per 1000, a ratio which is one-half that of the entire state.

The month of most prevalence is, as customary, August, when 121 deaths occurred; the usual autumn increase has been comparatively small. The following shows the comparison by months of the current year with the past average:

	Average number of deaths for 10 years.	Number of deaths, 1898
January	595	223
February	497	275
March.....	510	281
April.....	458	252
May.....	470	223
June	400	174
July.....	400	159
August.....	305	124
September.....	358	135
October	513	180
November.....	590	242
December.....	638	244

SCARLET FEVER

There were 837 deaths from this cause against 815 in 1897, and for the past four years this has been about the average yearly mortality. For four years prior to that there was a period

of greater mortality, about double that of the last four years. The average mortality of the previous 10 years was 1540 a year. Of the 875 deaths, 761 occurred in the Maritime district, a proportion continuing the same as in 1897. There has been a pretty steady decrease in the mortality from scarlet fever throughout the year, and during the three autumn months but 23 deaths are returned from it outside the maritime district and in that district 72 deaths.

MEASLES caused about the same number of deaths as scarlet fever, 838; the average of the 10 years preceding was 1080. The mortality of 1897 was the same, of 1896 it was double the number. It was almost unknown in the western districts, was more prevalent in the central part of the state and caused 644 deaths in the maritime district, whilst in the Hudson valley there were but 16. In the rural towns there was one death in 17,000 population; in the rest of the state one death in 8000 population. Its decrease during the course of the year has been more marked than that of scarlet fever, having caused but 48 deaths in the three fall months, whilst in the first three months of the year there were 340.

WHOOPING COUGH

From this cause there were 1155 deaths, a mortality which much exceeds that from either scarlet fever or measles. During 11 years the number of deaths caused by whooping cough has varied from 835 to 1335, the average yearly mortality being 1035. This year there were 100 more than the average. The largest mortality from whooping cough is urban, it being relatively greatest in districts having largest proportion of city population. In the maritime district 11 deaths per 1000 from all causes were from this disease; in the Lake Ontario and Western district, 9; in the Hudson valley district, 7; in the other districts from 4 to 6; and in the rural "Rest of districts," 6.

Its time of greatest prevalence is in the warmer months; there were 800 deaths in the six months, April to September, and in the other six months 335. July and August are every year the

months in which the largest number of deaths occur from whooping cough.

DIARRHEAL DISEASES

Which include all acute diseases of a diarrheal character, cholera infantum, dysentery, cholera morbus, enteritis, and diarrhea, caused a mortality of 8500. While this exceeds that of 1897 by 1200, since that was a year in which it was very exceptionally low, it is below the average by 300. A yearly mortality of nearly 10,000 from this cause has been reached, in 1893, but generally there is not much variation in total of each year of about 8750. Thus it is numerically one of the most important of all the groups of diseases, being exceeded only by consumption and the classified local diseases. Its mortality is nearly equal to that from all the zymotic diseases, including diphtheria.

The bulk of this mortality falls upon the four months, July to October, in which 7200 of entire number of deaths from it occurred. There was a large increase in June, to 372 deaths or three times that of the preceding months, but the number of deaths this year in October was nearly double that of June.

It is noteworthy that the early increase in diarrheal mortality, that of June and even largely of July, comes from the large cities, the country towns scarcely showing an increase; but the later autumn mortality is that of the country, where these diseases prevail after their subsidence in the city has been reached. This was especially true in 1898 when the deaths from dysentery and other inflammatory diarrheas are especially numerous.

The diarrheal mortality of Camp Wyckoff was not included, although the number from this cause would not have materially influenced the death rate of the state.

In the maritime district 7.5 per cent of all deaths of the year were from diarrhea; in the Hudson valley district 6.0 per cent; in the Adirondack and Northern, 5.8 per cent; in the Mohawk valley, 6.8 per cent; in the Southern tier, 6.0 per cent; in the East central, 5.6 per cent; in the West central, 5.0 per cent; and in the Lake Ontario and Western, 8.5 per cent.

A good many deaths are reported, especially from the rural parts of the state, in the early autumn, as from dysentery, but with what exactness this cause of death is used there is probably question. No separate record has been kept of this special disease, and no epidemic occurrence of it has been reported at any point during the year.

SMALLPOX

There has been but a single death reported from this cause during the year, and that came from New York city, and is supposed to have originated from a foreign source.

There has been, however, during the year in the western part of the state an exceedingly interesting epidemic of smallpox, the end of which had not been fully reached at the close of the year. It began in May, having been brought into the state by a traveling theatrical troupe, which traveling in its own cars and exhibiting in its own tent, entered the state April 28th, from the south, with a case of mild variola in its membership, the subject being so little sick that he performed his duties and escaped recognition until 22 localities had been visited. A secondary case was detected at Ithaca and the entire troupe arrested and quarantined at Geneva, May 21. All the visited localities were immediately notified, but nevertheless in many of these, or in adjoining towns whence people had gone to attend the exhibitions, cases developed, and whilst in some these developing cases were at once recognized and quarantined with the effect of arresting the spread of the disease, in others it escaped recognition, on account of the uniform mildness of the disease, and lasting for weeks and even months resulted in widespread distribution. The cases were generally diagnosed as chickenpox, and sometimes as contagious impetigo or some other impossible affection. In not a few instances, persons sick with this mild type of smallpox did not even call a physician, but the chief difficulty in arresting the spread has been the failure of physicians to recognize the nature of the disease. By repeated notifications, and inspection from the office of the State Board, an inspector being for a time stationed in the affected re-

gion, and by enforcing as far as possible general vaccination, especially by enforcing the law which prohibits the attendance in the public schools of unvaccinated children, the spread has been largely controlled. About 40 localities have been affected and more than 200 cases of the disease have occurred. Probably all of these have been traceable to the case in the traveling troupe, and the remarkable fact has been that they, with few exceptions have followed the course and preserved the mild type of the prime case, generally aborting during the vesicular stage. Their onset has uniformly been with rather severe initial fever lasting three days, subsidence of the fever with the appearance of eruption, which came first on the face, hands and forearms, where it was always most abundant. The eruption pursuing its customary course, at the beginning, but usually drying down before suppuration was fairly established. The subjects have usually been adults.

While there has never been the least question on the part of well-informed observers that the disease was other than smallpox, the mildness and unusual character commonly present in case after case as it has appeared in a community has been reasonable justification for the failure to recognize it on the part of physicians who, fortunately, in the present condition of protection from vaccination in most civilized states have few opportunities to see smallpox.

A detailed report of this epidemic will be found elsewhere in this volume.

Since 1888, the average yearly mortality from smallpox has been 90, ranging from 330 deaths in 1894, the three preceding years having likewise been years of excessive prevalence, to one death this year. In several years there have been but 3 or 4 deaths from it, coming as this year, from the seaboard metropolis.

CEREBRO-SPINAL MENINGITIS

This is a minor cause of mortality, having caused an average yearly mortality for past years of about 575. The deaths this year have been more than the average, 695, and only exceeded in 1893, 853 deaths. It is seventh in order of numerical mortal-

ity of the zymotic diseases. In the past 10 years 2.65 per cent. of the zymotic diseases have been from cerebro-spinal meningitis; in 1897, 3.24 per cent; in 1898, 4.00 per cent. In the sanitary districts the number of deaths from cerebro-spinal meningitis per 1000 deaths from all causes were as follows:

In the Maritime, 6.00; Hudson valley, 7.5; Adirondack and Northern, 5.5; Mohawk valley, 7.00; Southern tier, 3.5; East central, 2.8; West central, 2.5; Lake Ontario and Western, 8.00.

MALARIAL DISEASES

From this cause there was the same reported mortality as in 1897, viz. 400 deaths. There has been a gradual decrease in this as reported from 800 deaths 11 years ago, from year to year. There is reason to believe that the term is somewhat loosely used as a cause of death.

ERYSIPÉLAS, which is given separate record among the zymotic diseases, is reported as having caused 237 deaths during the year; this is 100 less than the average of 10 years preceding.

CONSUMPTION

This is not included among the so-called zymotic diseases, although it is understood to be a disease of zymotic origin. It caused 12,979 deaths during the year, diarrheal diseases causing 8479 and the remainder of the zymotic group 8743. It has caused year by year pretty nearly the same mortality, the average of the preceding 10 years being 13,070 deaths. It has varied little month by month, the average monthly rate of 1075 deaths being exceeded a little in the spring months and about the same in the other seasons, but never being less than 1000. There is no disease or group of diseases that is so uniform in its mortality rate. It has caused nearly 11 per cent of the total mortality, which it also did last year. For the whole state it has caused nearly 19 deaths per 10,000 population. It has, however, varied in the mortality of localities; the following table shows this, and shows that thickly settled and long settled city populations have the largest death rates. A constantly observed fact, uni-

form with past comparisons, is shown, that the Southern tier district has much the lowest mortality and the Maritime district the highest.

Deaths from consumption per 10,000 population in the—

DISTRICTS	1894	1895	1896	1897	1898
Maritime.....	22.2	23.8	23.1	22.8	22.0
Hudson valley.....	19.0	20.0	21.8	20.0	18.3
Adirondack and Northern.....	18.4	18.8	14.5	15.0	15.0
Mohawk valley.....	15.5	17.5	17.4	18.5	15.0
Southern tier.....	9.5	10.7	10.8	9.6	10.5
East central.....	14.8	18.4	14.2	18.4	12.5
West central	14.7	18.5	12.8	12.2	12.5
Lake Ontario and Western.....	15.4	16.0	15.1	12.5	12.0

ACUTE RESPIRATORY DISEASES

From this group there were 16,350 deaths during the year, or for the 12 months ending November 30th, 15,640. During the 10 years preceding the yearly average was about 17,000 deaths. As on this group mainly the deaths from grippe have fallen, its reported mortality has varied with its prevalence; prior to 1890 the yearly mortality was 13,500; since then it has not been less than 16,000, and has exceeded 21,000.

OTHER LOCAL DISEASES

The mortality from these was as follows:

From diseases of the digestive system.....	10,054
From diseases of the urinary system.....	8,490
From diseases of the circulatory system.....	9,672
From diseases of the nervous system.....	13,116

In each 10,000 population there were—

From acute respiratory diseases.....	23.0	deaths.
From diseases of the digestive system.....	15.00	"
From diseases of the urinary system.....	12.50	"
From diseases of the circulatory system.....	14.25	"
From diseases of the nervous system.....	18.00	"

PUERPERAL DISEASES

There were 910 deaths from these diseases, or less than one per cent of the total. There are usually about 1000 deaths reported annually from this cause.

CANCER

There were 4385 deaths from cancer in the state. The average for the past 10 years has been 3200. There were about 60 deaths per 100,000 population in the past two years.

The commercial mortality from cancer has regularly increased each year, the number of deaths in each of the past 12 years being:

1887.....	2,363	|	1893.....	3,237
1888.....	2,473	|	1894.....	3,290
1889.....	2,632	|	1895.....	3,517
1890.....	2,851	|	1896.....	3,765
1891.....	2,989	|	1897.....	4,131
1892.....	3,189	|	1898.....	4,385

Season has had little influence on the mortality from cancer, there were:

In the winter	911
In the spring	962
In the summer	933
In the autumn	959

As to geographical distribution, the number of deaths from cancer was:

In each 100,000 population—

	1898	1896
In the Maritime district.....	57.0	54.5
In the Hudson valley district.....	60.0	60.0
In the Adirondack and Northern district....	54.4	51.5
In the Mohawk valley district.....	67.0	51.0
In the Southern tier district.....	60.0	56.0
In the East central district.....	71.0	73.5
In the West central district.....	70.0	59.5
In the Lake Ontario and Western district....	61.0	61.0

ACCIDENTS AND VIOLENCE

Caused 6500 deaths. From this cause also there has been an increasing yearly reported mortality. July, August and September are the months which specially contribute to this mortality, which is then increased largely by drowning and sun-stroke. In February there were 327 deaths by violence and in September 927, the Maritime district showing in these months, respectfully, 181 and 666 deaths from this cause.

OLD AGE

There were 5500 deaths recorded from old age. This is below the average of 10 years past. In March, 511 deaths were placed in this class, the highest number in a month, and in June, 361, the lowest.

INFANT MORTALITY

There were 37,000 deaths under the age of five years, the usual average for the state of 31.0 per cent. In the winter months 25.0 per cent of all deaths; in the spring, 27.7 per cent; in the summer, 39.0 per cent; in the fall, 30.7 per cent occurred under this age.

Delayed returns, that is certificates of death received too late for insertion in the bulletin numbered 735, of which one was from cerebro-spinal meningitis; four from typhoid fever; one from scarlet fever; one from measles; nine from diphtheria; one from whooping-cough; 13 from diarrheal diseases, and 38 from consumption.

Meteorological data for 1898; averages for each month

[From records of the New York State Weather Bureau, Prof. E. A. Fuertes, director, Ithaca, N. Y., and of the stations in this State of the National Weather Bureau]

STATIONS	BAROMETER			HUMIDITY		TEMPERATURE (DEGREES FAHRENHEIT)					SKY		PRECIPITATION (INCHES)				WIND			
	Mean	Highest	Lowest	Mean relative	Dew point	Mean	Mean for 28 years	Highest	Lowest	Greatest daily range	Least daily range	Number clear days	Partly cloudy	Cloudy	Total	Average years	Total excess	Total deficiency	Prevailing direction	Total miles
January.....	30.00	30.52	29.27	78	20	23.0	24.0	52	-12	28	4	2	2	16	4.19	2.10	1.10	0.78	W.	8,900
February.....	30.00	30.53	29.40	77	21	26.0	26.5	55	-13	31	4	6	7	15	2.80	2.09	0.20	0.78	W.	7,187
March.....	30.19	30.58	29.80	74	31	40.0	31.0	65	13	31	9	13	8	10	2.11	3.00	..	..	W.	8,301
April.....	30.99	30.82	29.55	67	21	42.7	44.0	70	15	35	6	20	9	11	2.65	2.43	0.21	..	N.W.	7,194
May.....	30.54	30.25	29.62	76	48	56.5	56.5	85	35	33	9	7	11	13	4.15	3.41	0.50	..	S.W.	6,453
June.....	29.97	30.33	29.47	71	57	67.0	68.0	90	43	33	9	10	13	8	3.89	2.43	..	0.40	W.	6,705
July.....	30.63	30.42	29.75	69	62	72.5	70.5	95	43	35	11	15	13	4	3.00	3.65	..	0.70	S.W.	6,300
August.....	30.82	30.20	29.74	74	67	70.0	69.0	99	46	33	8	9	13	9	5.15	2.50	2.00	0.33	S.W.	6,580
September.....	30.04	30.45	29.63	76	56	75.0	63.5	91	37	33	9	15	9	6	8.00	3.10	..	..	S.W.	6,755
October.....	30.10	30.42	29.39	77	46	55.0	52.4	88	26	31	6	8	8	14	5.15	3.16	3.00	..	W.	8,251
November.....	30.76	30.70	29.51	70	32	59.0	40.0	83	13	31	4	7	8	15	4.10	2.80	1.00	..	W.	9,171
December.....	30.13	30.53	29.35	75	33	53.0	33.0	50	-4	33	4	6	6	17	2.43	3.00	..	0.40	W.	11,000
Year (average).....	30.03	30.43	29.31	74	40	49.0	46.0	95	12	33	6	114	113	133	41.55	27.10	4.00	W.	7,900

STATE BOARD OF HEALTH

637

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Record of each reporting local board of health, etc.—(Continued)

NAME OF PLACE	Population	All deaths	Cerebro-spinal meningitis	Typhoid fever	Malarial diseases	Scarlet fever	Measles	Whooping cough	Diphtheria	Diarrhea	Consumption
Delaware county—(Continued)											
Harpersfield	1,336	9	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kortright	1,535	17	.....	.....	.....	.....	.....	.....	.....	.....	.....
Masonville	1,464	20	.....	.....	.....	.....	.....	.....	.....	3	.....
Meredith	1,529	17	.....	.....	.....	.....	.....	.....	.....	.....	1
Middletown	3,593	45	.....	1	.....	.....	.....	.....	.....	.....	3
Roxbury	2,248	18	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sidney	3,320	54	1	1	.....	1	.....	.....	.....	2	1
Stamford	1,902	22	.....	.....	.....	.....	.....	.....	.....	.....	1
Tompkins	2,727	13	.....	.....	.....	.....	.....	.....	.....	.....	.....
Walton	4,811	70	.....	1	.....	.....	4	.....	.....	8	1
Dutchess county	78,795	1,366	4	13	4	1	.....	8	16	47	114
POUGHKEEPSIE	23,200	428	2	5	2	.....	.....	7	10	16	45
Amenia	2,504	37	.....	.....	.....	.....	.....	.....	.....	2	3
Beckman	1,109	19	.....	.....	.....	.....	.....	.....	.....	.....	.....
Clinton	1,449	21	.....	.....	.....	.....	.....	.....	.....	.....	2
Dover	1,768	40	.....	.....	.....	.....	.....	.....	1	8	.....
East Fishkill	2,323	27	.....	.....	.....	.....	.....	.....	.....	.....	1
Fishkill	11,726	211	.....	4	2	.....	.....	.....	1	19	32
Hyde Park	2,808	39	.....	.....	.....	.....	.....	.....	1	.....	1
La Grange	1,463	31	.....	.....	.....	.....	.....	.....	.....	.....	3
Milan	1,062	25	.....	.....	.....	.....	.....	.....	.....	.....	1
North East	2,158	25	1	.....	.....	.....	.....	.....	.....	2	.....
Pawling	1,917	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pine Plains	1,439	20	.....	.....	.....	.....	.....	.....	.....	1	.....
Pleasant Valley	1,554	35	1	4
Poughkeepsie	3,807	53	1	2
Red Hook	4,072	61	1	1	4

STATE BOARD OF HEALTH

643

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Record of each reporting local board of health, etc.—(Continued)

NAME OF PLACE	Population	All deaths	Cerebro-spinal meningitis	Typhoid fever	Malarial diseases	Banquet fever	Meningitis	Whooping cough	Diphtheria	Dysentery	Consumption
Essex county—(Continued)											
Essex	1,435	23									1
Jay	1,763	31									1
Keene	1,205	11									1
Lewis	1,248	13									1
Minerva	1,059										
Morish	6,977	66		1				1	1		1
Newcomb	418	3									
North Elba	1,216	35									5
North Hudson	650	2									1
Selroon	1,450	11									2
St. Armand	651	11									1
Ticonderoga	4,267	66		1		1				1	1
Westport	1,827	30									1
Willsborough	1,642	15		1							1
Wilmington	668	6									
Franklin county	39,787	436	1	2		1	6	6	10	24	36
Albion	1,051	52		2					8	1	4
Bangor	2,351	23								1	1
Belmont	2,663	23	1				1	1			2
Bromley	1,467	41						1		3	6
Brandon	886	11									
Brighton	412	18									
Burke	2,113	19									2
Chateaugay	2,777	18									1
Constable	1,524	20									1
Dickinson	1,689	43				1					2

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STATE BOARD OF HEALTH

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See the City of New York

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STATE BOARD OF HEALTH

657

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Record of each reporting local board of health, etc.—(Continued)

NAME OF PLACE	Population	All deaths	Cerebro-spinal meningitis	Typhoid fever	Malarial diseases	Scarlet fever	Measles	Whooping cough	Diphtheria	Diarrhea	Consumption
Rensselaer county—(Continued)											
Sand Lake.....	2,474	45	1	2	.....	.....	.....	.....	2	.....	2
Schaghticoke.....	2,973	50	.....	3	.....	.....	.....	.....	1	1	4
Schojack.....	4,514	70	.....	1	.....	.....	.....	.....	.....	6	5
Stephentown.....	1,799	32	.....	.....	.....	.....	.....	.....	.....	3	.....
Richmond county*											
Rockland county.....	33,695	504	2	5	1	5	1	11	5	20	34
Clarkstown.....	5,552	95	1	.....	.....	1	.....	2	1	2	4
Haverstraw.....	7,714	96	.....	.....	1	2	.....	.....	.....	5	6
Orangetown.....	4,570	84	2	.....	.....	1	.....	1	2	1	3
Nyack.....	5,603	71	.....	2	.....	.....	1	5	.....	6	13
Ramapo.....	6,600	93	.....	2	.....	1	.....	3	.....	6	6
Stony Point.....	3,656	65	.....	1	.....	.....	.....	.....	2	.....	2
St. Lawrence county.....											
OGDENSBURGH.....	86,341	1,259	6	36	1	.....	7	7	6	57	97
Brasher.....	12,000	238	6	9	1	.....	2	2	2	26	12
Canton.....	2,927	26	.....	.....	.....	.....	.....	.....	.....	1	2
Clare.....	6,013	101	.....	1	.....	.....	1	.....	.....	3	11
Clifton.....	332	6	.....	.....	.....	.....	.....	.....	.....	1	.....
Colton.....	855	8	.....	2	.....	.....	.....	.....	.....	.....	.....
De Kalb.....	1,860	40	.....	2	.....	.....	1	.....	.....	3	.....
De Peyster.....	2,777	27	.....	1	.....	.....	.....	.....	.....	.....	.....
Edwards.....	974	13	1
Fine.....	1,471	11
Fowler.....	1,337	25	1	2	1
Gouverneur.....	1,750	25	2
	6,000	85	2	1	1	7	6

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***See the City of New York**

STATE BOARD OF HEALTH

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Suffolk county.....	1,210	12	4	3	5	1	5	53	113
Babylon.....	128	2	1	2	8
Brookhaven.....	217	5	1	3	1	1	12	26
East Hampton.....	39	1	.....	.....	.....	.....	.....	4	.....
Huntington.....	135	.....	1	.....	2	.....	1	11	13
Islip.....	162	.....	.....	.....	.....	.....	1	10	15
Riverhead.....	72	1	.....	.....	.....	.....	.....	2	3
Shelter Island.....	9	.....	.....	.....	.....	.....	.....	.....	.....
Smithtown.....	193	2	.....	.....	2	.....	.....	5	32
South Hampton.....	115	1	.....	.....	1	.....	.....	2	2
Sag Harbor.....	48	.....	2	.....	.....	.....	.....	.....	5
Southold.....	92	1	.....	.....	.....	.....	1	5	9
Sullivan county.....	445	8	.....	.....	1	.....	4	15	53
Bethel.....	27	.....	.....	.....	.....	.....	.....	.....	2
Callicoon.....	35	.....	.....	.....	.....	.....	1	1	2
Cochecton.....	13	.....	.....	.....	.....	.....	.....	.....	1
Delaware.....	18	.....	.....	.....	.....	.....	.....	1	.....
Fallsburgh.....	42	1	.....	.....	.....	.....	.....	2	4
Forestburgh.....	4	.....	.....	.....	.....	.....	.....	.....	.....
Fremont.....	18	.....	.....	.....	.....	.....	.....	3	.....
Highland.....	15	.....	.....	.....	.....	.....	.....	.....	2
Liberty.....	84	2	.....	.....	.....	.....	2	6	25
Lumberland.....	5	.....	.....	.....	.....	.....	.....	.....	.....
Mamakating.....	54	.....	.....	.....	1	.....	1	1	5
Neversink.....	26	.....	.....	.....	.....	.....	.....	.....	3
Rockland.....	38	.....	.....	.....	.....	.....	.....	1	.....
Thompson.....	47	.....	.....	.....	.....	.....	.....	.....	8
Tusten.....	19	.....	.....	.....	.....	.....	.....	.....	1
Tioga county.....	475	8	.....	.....	1	1	1	20	28
Waverly.....	69	.....	.....	.....	.....	1	.....	4	6
Barton.....	30	.....	.....	.....	.....	.....	.....	.....	1
Berkshire.....	11	.....	.....	.....	.....	.....	.....	.....	.....
Candor.....	58	.....	.....	.....	.....	.....	.....	3	2
Newark Valley.....	42	1	1	3
Nichols.....	16	1
Owego.....	85	1	1	2	2
Owego.....	92	4	10	9

STATE BOARD OF HEALTH

665

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Westchester county.....	2,803	4	18		14	17	37	78	197	249
Yonkers	750	6		2	3	10	32	65	88
MOUNT VERNON.	277	1	3		2	7	4	5	34	15
NEW ROCHELLE.	179	1	1		3	....	3	11	24	9
Bedford	55	....	....		....	....	....	....	....	4
Cortlandt	121	....	2		....	....	1	2	6	8
Pekskill	194	....	2		2	1	3	6	15	25
East Chester.....	43	....	....		....	1	....	....	2	2
Greenburgh.....	231	1	2		6	2	2	10	10	22
Harrison.....	21	....	....		....	....	....	....	....	1
Lewisboro.....	20	....	....		....	....	....	....	....	1
Mamaroneck.....	100	....	....		....	....	1	....	3	5
Mount Pleasant.....	196	1	....		1	....	....	2	12	21
New Castle.....	40	....	....		....	....	....	....	....	2
New Rochelle.....	25	....	....		....	....	....	....	....	....
North Castle.....	15	....	....		....	....	....	....	....	1
North Salem.....	24	....	....		....	....	....	....	....	3
Ossining	18	....	....		....	....	....	1	....	....
Slag Sing	141	....	....		1	....	1	3	7	17
Pelham	8	....	....		....	....	....	....	....	1
Poundridge.....	12	....	....		....	....	....	....	1	1
Port Chester	109	....	....		1	3	9	1	8	10
Rye	42	....	....		....	....	....	....	....	2
Scarsdale.....	5	....	....		....	....	....	....	....	1
Somers	18	....	....		....	....	....	....	....	1
White Plains	30	....	....		....	....	....	....	1	1
White Plains.....	104	....	2		....	....	3	5	9	7
Yorktown	25	....	....		....	....	....	....	....	1
Wyoming county	408	....	1		....	1	....	1	4	15
Arcade	31	....	....		....	....	....	....	....	1
Attica.....	32	....	....		....	....	....	....	....	3
Bennington.....	25	....	....		....	....	....	1	....	1
Castile.....	32	....	....		....	....	....	....	....	1
Covington.....	12	....	....		....	....	....	....	1	1
Eagle	17	....	....		....	....	....	....	....	1
Gainesville.....	33	....	....		....	....	....	....	....	....
Genesee Falls.....	8	....	....		....	....	....	....	....	....
Java	20	....	....		....	....	....	....	....	1

Record of each reporting local board of health, etc.—(Concluded)

NAME OF PLACE	Population	All deaths	Cerebro-spinal meningitis	Typhoid fever	Malarial diseases	Scarlet fever	Measles	Whooping cough	Diphtheria	Diarrhea	Consumption
Wyoming county—(Continued)											
Middlebury.....	1,605	23	.....	.....	.....	.....	.....	.....	.....	1	.....
Orangeville.....	1,123	14	.....	.....	.....	.....	.....	.....	.....	.....	.....
Perry.....	2,990	47	.....	1	.....	.....	.....	.....	.....	.....	1
Pike.....	1,334	18	.....	.....	.....	.....	1	.....	.....	.....	.....
Sheldon.....	2,067	17	.....	.....	.....	.....	.....	.....	.....	.....	1
Warsaw.....	4,700	63	.....	.....	.....	.....	.....	.....	.....	2	4
Wethersfield.....	1,026	11	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yates county.....	20,949	269	1	8	.....	.....	.....	.....	.....	8	16
Barrington.....	1,318	16	.....	.....	.....	.....	.....	.....	.....	.....	1
Benton.....	2,202	29	1	1	.....	.....	.....	.....	.....	.....	2
Italy.....	1,190	9	.....	.....	.....	.....	.....	.....	.....	.....	.....
Jerusalem.....	2,801	22	.....	1	.....	.....	.....	.....	.....	.....	1
Middlesex.....	1,364	16	.....	.....	.....	.....	.....	.....	.....	.....	1
Milo.....	2,322	20	.....	.....	.....	.....	.....	.....	.....	1	.....
Penn Yan.....	4,254	81	.....	1	.....	.....	.....	.....	.....	2	7
Potter.....	1,693	24	.....	.....	.....	.....	.....	.....	.....	.....	2
Starkey.....	2,668	35	.....	.....	.....	.....	.....	.....	.....	.....	1
Torrey.....	1,137	17	.....	.....	.....	.....	.....	.....	.....	.....	1
State prisons.....	.....	18	.....	.....	.....	.....	.....	.....	.....	.....	9
State asylums.....	.....	701	.....	3	.....	.....	1	.....	.....	3	57
Other public institutions.....	.....	315	.....	.....	.....	1	7	17	6	20	12

MONTHLY BULLETIN OF THE NEW

*Abstract of reports of deaths and causes in the following**[Cities are printed in SMALL CAPS, villages in italics and towns in Roman]*

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of —	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
MARITIME DISTRICT								
Totals	5,515	18 35	1,743	31.7	107.00	21	21	
CITY OF NEW YORK								
Totals	3,438,899	5,128	17 53	1,845	33.1	106.00	20	21
BOROUGH OF MANHATTAN	1,911,755	2,919	18 00	1,000	34 2	103 40	16	9
BOROUGH OF THE BRONX	187,075	255	21 45	80	31 3	104 50	1	1
BOROUGH OF BROOKLYN	1,197,100	1,569	16 45	496	32 0	112 20	12	12
BOROUGH OF QUEENS	128,042	178	16 05	52	32 6	120 20	1	1
BOROUGH OF RICHMOND	64,937	187	19 35	17	16 0	20 00	1	1
Oyster Bay	15,000	22	17 70	3	9 0	135 00	1	1
Hempstead	24,000	34	17 00	7	21 5	110 00	1	1
North Hempstead	8,726	10	14 00	1	11 0	110 00	1	1
Southold	7,671	9	14 50	1	11 0	116 00	1	1
Sag Harbor	3,000	4	16 00	1	25 0	330 00	1	1
Huntington	5,258	9	13 15	2	22 0	110 00	1	1
Brookhaven	13,500	13	17 00	3	22 0	110 00	1	1
YONKERS	36,000	51	17 00	21	40 0	120 00	1	1
Greenburgh	12,000	11	11 00	1	9 0	90 00	1	1
MOUNT VERNON	15,513	27	20 75	7	26 0	75 00	1	1
Port Chester	7,547	10	16 00	3	20 0	100 00	1	1
Sing Sing	9,500	10	18 00	1	10 0	110 00	1	1
New Rochelle	8,217	14	23 00	4	24 5	70 00	1	1
Peekskill	9,876	16	20 00	6	37 5	315 00	1	1
White Plains	4,042	7	21 00	0	14 50	110 00	1	1
Rest of district	140	16 00	39	28 0	65 00	1	1	
HUDSON VALLEY DISTRICT								
Totals	978	15 00	191	19 6	105 00	3	36	
ALBANY	100,000	174	20 85	45	25 5	150 00	12	12
CORCOES	24,000	9	14 50	9	30 0	90 00	1	1
TROY	66,000	95	17 55	13	18 5	125 00	1	1
WATERVLIET	13,000	24	24 15	2	8 5	85 00	1	1
Green Island	4,500	4	19 00	2	50 0	110 00	1	1
Lansingburgh	10,550	18	21 10	3	16 7	50 00	1	1
Hoosick Falls	7,014	9	15 50	2	22 7	110 00	1	1
REMSEDLARK	7,463	9	16 00	1	11 0	111 00	1	1
Coxsack	8,694	5	16 00	2	48 0	200 00	1	1
Catskill	5,000	11	24 00	3	36 5	90 00	1	1
HUDSON	9,638	16	20 00	3	18 5	110 00	1	1
KINGSTON	21,500	39	21 45	11	33 0	75 00	1	1
Ellenville	3,000	3	12 00	0	11 0	840 00	1	1
Marbletown	3,690	10	25 00	1	10 0	200 00	1	1
Rosendale	8,122	8	15 75	3	37 5	400 00	1	1
ESOPUS	5,035	9	21 50	1	11 0	222 00	1	1
Saugerties	4,237	8	22 50	2	25 0	30 00	1	1
POUGHKEEPSIE	23,240	31	16 50	4	14 0	30 00	1	1
Fishkill	11,726	17	18 00	3	18 0	120 00	1	1
Wappinger Falls	8,718	5	15 10	2	40 0	110 00	1	1
NEWBURN	24,536	41	20 00	3	20 0	50 00	1	1
Port Jervis	9,327	16	30 50	1	7 5	110 00	1	1
MIDDLETOWN	11,832	11	12 00	1	9 0	90 00	1	1
Warwick	6,000	5	10 00	1	20 0	110 00	1	1
Goshen	4,616	10	24 00	9	30 0	110 00	1	1

MONTHLY BULLETIN OF THE NEW
Abstract of reports of deaths and causes in the following

(Cities are printed in small caps, villages in italics and towns in Roman)

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of -	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
MARITIME DISTRICT								
Totals	8,515	18.25	1,743	31.7	107.00	21	35	
CITY OF NEW YORK								
Totals	3,438,800	5,128	17.55	1,545	32.1	108.00	20	31
BOROUGH OF MANHATTAN	1,911,755	2,919	18.00	1,000	34.2	103.40	16	9
BOROUGH OF THE BRONX	187,075	255	21.45	80	31.3	168.50	..	..
BOROUGH OF BROOKLYN	1,197,100	1,649	16.45	496	30.0	112.00	..	13
BOROUGH OF QUEENS	128,842	178	16.05	52	33.6	120.20	..	..
BOROUGH OF RICHMOND	64,927	107	19.35	17	16.0	20.00	..	..
Oyster Bay	15,000	34	17.70	2	9.0	185.00	..	..
Hempstead	24,400	54	17.00	7	21.5	..	..	..
North Hempstead	8,728	10	14.00	1	11.0	110.00	..	..
Southold	7,671	9	14.50	1	11.0	110.00	..	..
Sag Harbor	3,000	4	18.00	1	25.0	..	..	..
Huntington	8,253	9	13.15	2	22.0	330.00	..	..
Brooklyn	13,100	18	..	3	..	..	..	..
YONKERS	38,000	51	17.00	21	40.0	120.00	..	1
Greenburgh	12,400	11	11.00	1	9.0	90.00	..	..
MOUNT VERNON	15,518	27	20.75	7	26	75.00	1	1
Port Chester	7,647	10	18.00	3	30.0	10.00	..	..
Sing Sing	9,500	10	13.00	1	10.0	..	..	..
New Rochelle	9,217	14	23.00	4	8.5	70.00	..	..
Peekskill	9,676	16	20.00	8	37.5	315.00	..	1
White Plains	4,042	7	21.00	0	..	14.50	..	1
Rest of district .....	..	140	16.60	39	26.0	65.00	..	..
HUDSON VALLEY DISTRICT								
Totals	978	15.00	131	19.5	105.00	3	35	
ALBANY	100,000	174	20.25	45	25.5	150.00	..	12
CORRUS	24,000	9	14.50	9	30.0	300.00	..	..
TROY	65,000	93	17.5	18	13.5	135.00	1	2
WATERBURY	13,000	24	22.5	2	8.5	85.00	..	9
Green Island	4,500	4	12.00	2	50.0	..	..	1
Lansingburgh	10,550	18	21.10	3	16.7	50.00	..	..
Hoosick Falls	7,014	8	15.50	2	22.4	110.00	..	..
Roswell	7,468	9	15.00	1	11.0	111.00	..	..
Coxsack	3,624	5	6.00	3	40.0	200.00	..	..
Catskill	5,000	11	24.00	3	36.5	20.00	..	..
HUDSON	9,638	16	20.00	3	14.5	..	..	..
KINGSTON	21,500	39	21.5	11	33.0	75.00	..	..
Ellenville	3,000	3	12.00	0	..	30.00	..	..
Marlborough	3,689	10	25.00	1	10.0	200.00	..	..
Reensdale	6,135	8	15.75	3	37.5	50.00	1	1
Esopus	5,035	9	21.50	1	11.0	22.00	..	..
Saugerties	4,387	8	22.50	2	25.0	120.00	..	..
POUGHKEEPSIE	28,240	31	11.00	4	13.0	30.00	..	..
Pliskill	11,726	17	18.00	3	18.0	120.00	..	..
Wappinger Falls	8,718	6	16.00	2	40.0	..	..	..
NEWBURGH	24,636	41	20.00	8	20.0	50.00	..	1
Port Jervis	9,387	16	20.50	1	7.5	..	..	..
MIDDLETOWN	11,613	11	18.00	1	9.0	90.00	..	..
Warwick	6,000	8	10.00	1	20.0	..	..	..
Goshen	4,616	10	24.00	2	20.0	..	..	..

YORK STATE BOARD OF HEALTH

districts, cities, villages and towns during January, 1898

type. For boundaries of Sanitary districts see Annual summary]

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MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of—	Infants under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
HUDSON VALLEY DIST—(Con.)								
Montgomery.....	5,269	8	15.36	0	0	0	0	0
Haverstraw.....	7,774	12	15.72	6	41.5	0	0	0
Nyack.....	5,601	7	14.00	2	28.6	0	0	0
Ramapo.....	8,660	16	24.00	6	31.6	128.00	0	0
Rest of district.....		534	14.50	54	16.5	80.00	1	1
ADIRONDACK AND NORTHERN DISTRICT								
Totals.....		416	14.00	68	16.0	75.00	4	18
WATKINTOWN	17,000	22	16.20	3	18.0	85.00	0	0
Ellisburgh.....	4,283	5	15.00	0	0	0	0	0
Cape Vincent.....	8,000	2	2.50	0	0	0	0	0
Clayton.....	4,250	1	2.35	0	0	0	0	0
Ogdensburg.....	12,000	25	24.00	18	50.0	200.00	1	1
Gouverneur.....	6,000	8	16.00	1	16.7	166.70	0	0
Potsdam.....	4,000	7	21.00	0	0	0	0	0
Canton.....	6,018	3	5.00	0	0	0	0	0
Malone.....	8,000	7	17.00	2	28.5	0	0	0
Plattsburgh.....	7,010	10	17.15	2	20.0	100.00	0	0
Glens Falls.....	10,000	14	16.75	4	28.5	142.85	0	1
Whitehall.....	4,434	1	2.25	0	0	0	0	0
Fort Edward.....	4,888	4	12.00	0	0	0	0	0
Kingsbury.....	5,112	2	3.90	0	0	0	0	0
Granville.....	5,281	9	20.00	0	0	330.00	0	0
Salem.....	8,187	1	1.20	0	0	0	0	0
Greenwich.....	4,481	2	4.46	0	0	0	0	0
Rest of district.....		294	12.00	44	14.0	60.00	2	8
MOHAWK VALLEY DISTRICT								
Totals.....		496	16.00	68	13.8	47.50	1	6
SCHENECTADY	24,374	22	11.00	2	9.1	0	0	0
Cobleskill.....	8,436	6	21.00	0	0	0	0	0
AMSTERDAM.....	15,512	20	18.00	6	30.0	0	0	0
Fort Plain.....	8,000	6	24.00	1	16.7	167.00	0	0
JOHNSTOWN.....	7,768	14	21.50	3	20.9	65.00	0	0
GLOVERSVILLE.....	14,634	24	10.65	3	12.5	0	0	0
LITTLE FALLS.....	12,000	13	18.00	1	8.0	0	0	0
Herkimer.....	5,150	7	16.00	2	28.5	0	0	0
Ilion.....	4,057	5	15.00	1	20.0	0	0	0
UTICA.....	55,000	60	15.00	18	36.0	80.00	1	1
Whitestown.....	5,225	7	16.10	0	0	142.85	0	0
Rome.....	13,684	21	18.45	0	0	50.00	0	0
Boonville.....	3,512	1	2.85	0	0	0	0	0
Camden.....	3,675	2	10.00	0	0	0	0	0
Waterford.....	5,522	8	14.50	0	0	0	0	0
Afghanistan.....	3,000	5	24.00	1	16.7	166.70	0	0
Ballston Spa.....	3,527	4	16.00	1	25.0	250.00	0	0
Saratoga Springs.....	18,000	28	22.00	2	10.0	90.00	0	1
Rest of district.....		243	15.00	27	11.5	50.00	1	2
SOUTHERN TIER DISTRICT								
Totals.....		417	13.50	50	12.0	80.00	1	12
BINGHAMTON	34,514	51	17.65	10	30.0	80.00	0	0
Oneonta.....	6,000	9	18.00	0	0	0	0	0
Candor.....	2,525	5	17.00	1	20.0	0	0	0
Waverly.....	4,123	4	19.00	0	0	0	0	0
ELMIRA.....	20,000	43	17.80	7	16.3	115.00	0	0

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST.—(Con.)								
Horseheads.....	8,319	1		1				
HORNELLVILLE.....	13,400	11	11.00	0				
Bath.....	3,361							
CORNING.....	10,095	18	13.00	0		100.00		1
Wellsville.....	5,083	2		1				
OLEAN.....	8,000	5		2				
Salamanca.....	3,700	3	10.00	0				
DUKEBURGH.....	10,000	13	15.00	2				
JAMESTOWN.....	18,327	14		2				
Westfield.....	3,300							
Fredonia.....	3,400	6	21.00	1	16.7			
Rest of district.....		223	14.00	23	10.0	85.00	1	6
EAST CENTRAL DISTRICT								
Totals.....		534	17.00	67	12.0	70.00		13
SYRACUSE.....	130,000	147	14.70	24	16.3	89.00		2
Baldwinsville.....	3,040	5	24.00	0				
De Witt.....	4,182	4	10.00	1	25.0	250.00		
Cortland.....	3,600	14	19.00	3	21.5	75.00		1
Homerville.....	2,000	7	24.00	1	14.3			
Oneida.....	4,088	8	15.00	0				
Hamilton.....	4,110	3		0				
Cazenovia.....	2,803	6	19.00	0				
Brookfield.....	3,235	10	30.00	1	10.0			
Norwich.....	6,000	11	22.00	1	9.0	180.00		
Oneonta.....	6,776	8	15.30	2	25.0	125.00		
Worcester.....	2,670	5	20.00	2	40.0	200.00		1
Coopersburg.....	3,000	3	12.00	0				
Walton.....	4,311	4		1				
Delhi.....	3,000	4		0				
Liberty.....	3,500	6	20.70	0				
Rest of district.....		228	16.00	30	13.0	75.50		3
WEST CENTRAL DISTRICT								
Totals.....		371	15.00	49	13.5	58.00	1	4
AUBURN.....	25,000	41	19.75	12	30.0	25.00		
ITHACA.....	13,450	11	10.00	0				
Hector.....	4,343	3		0				
Watertown.....	4,350	6	17.00	0				
Seneca Falls.....	6,500	5	10.00	1	20.0	200.00		
GENEVA.....	7,537	14	23.00	3	21.5	215.00		
Canandaigua.....	5,868	5	11.00	1	18.0	200.00		
Manchester.....	4,181	6	18.00	1	16.7			1
Phelps.....	6,150	9	20.00	1	12.5			
Penn Yan.....	4,354	3	23.50	2	25.0	135.00		
Batavia.....	7,331	4		0				
Danville.....	3,756							
Le Roy.....	3,000	5	20.00	0				
Warren.....	4,700	6	20.40	1	12.5			
Rest of district.....		346	14.50	27	11.0	60.00	1	3
LAKE ONTARIO AND WESTERN DISTRICT								
Totals.....		905	14.35	131	30.0	81.50	3	14
BUFFALO.....	360,000	313	10.43	34	30.0	115.00	3	4
TONAWANDA.....	9,000	9	12.00	2	22.0			1
Amherst.....	4,000	3		0				

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of -	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT—(Continued)								
NORTH TONAWANDA	9,000	7	10.00	4	57.0	142.85	.....	.....
LOCKPORT	16,088	23	24.00	3	9.5	180.00	.....	3
NIAGARA FALLS	10,000	18	18.00	8	33.3	55.00	.....	1
Medina	4,500	7	18.85	1	12.5	.....	.....	.....
Albion	4,536	5	13.00	0	.....	.....	.....	.....
Brookport	3,742	5	16.00	0	.....	.....	.....	.....
ROCHESTER	175,000	174	12.00	28	13.2	62.50	.....	1
Palmyra	4,173	4	12.00	.....	.....	.....	.....	.....
Newark	3,000	4	16.00	0	.....	.....	.....	.....
Lyons	9,127	10	20.00	4	40.0	40.00	.....	.....
Clyde	3,000	5	20.00	1	20.0	200.00	.....	.....
Oswego	22,060	30	17.00	9	30.0	33.80	.....	.....
Fulton	4,214	8	22.75	5	62.5	250.00	.....	1
Richland	3,537	7	23.00	8	.....	.....	.....	.....
Rest of district .....	.....	285	14.00	20	11.0	40.00	.....	3
Totals for the state .....	.....	9,632	17.00	3,316	25.0	55.50	34	122
Average for Jan for past 10 years .....	.....	10,500	19.25	2,900	27.6	125.00	44	122
Totals for December, 1897 .....	.....	9,160	18.75	2,195	25.0	97.15	23	160

REMARKS—There were reported 9,632 deaths from all causes during the month, which is population annual y, against 17.25 a year ago. The number of deaths in early life and also 10 years has been 10,500, 28.0 per cent of the deaths having occurred under the age of five months. Compared with the preceding month, the death-rate in December was 16.75, were relatively the same as this month. All the zymotic diseases caused somewhat of 200 deaths from acute respiratory diseases, and a moderate increase in deaths reported to 180 deaths. From these latter causes of death there was a small increase over the same as this, it may be estimated that grippé, which has been reported from all parts of deaths by about 400; it was the estimated cause of 200 deaths in December, and 300 in for January for 10 years, during which month for that period grippé has been actively last month and in January, 1897. Diseases of the digestive, urinary and circulatory systems deaths, the least number for January in 10 years by nearly one half the average for that per cent of the mortality in urban parts of the state and little over 1 per cent of the rural limited to the maritime district, the latter of more general distribution. Numerous localities month, or 1° below the normal, the average highest being 52°, lowest -12°. There was a except that of New York city.

FOR JANUARY—(Concluded)

Malarial diseases	Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough	Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
.....	1	2	1	.....	.....	.....	1	2	1	.....	.....	1	2	2
.....
.....
.....	5	5	21	28	2	11	11	22	28	9	2	21	9
.....
.....	1	.....	1	1	1	.....	1	1	1	1	1	.....	1	.....
.....	1	.....	8	3	.....	.....	1	1	3	.....	.....	3	2
.....	1	.....	.....	1	1	.....	1	.....	.....	.....	.....	.....	1	3
.....
3	2	.....	2	51	29	3	15	16	31	36	19	14	30	20
26	..	123	112	2	44	323	118	1,765	1,051	91	642	739	918	1,032	746	400	467	1168
41	9	75	100	37	76	600	116	2,353	1,215	97	607	625	808	1,065	282	312	645	1865
20	..	91	60	26	43	335	191	1,641	1,056	61	610	679	952	181	344	427	501	1108

nearly identical with the number for January, 1897, the death rate being 17.00 per 1,000 from zymotic diseases is less, especially the former. The average mortality in January for years, against 25.0 this month, and 12.5 per cent from zymotic diseases against 19.0 this there having been 400 fewer deaths, and both the infant and the zymotic mortality fewer deaths except scarlet fever and measles which increased. There was an increase from diseases of the digestive, urinary, circulatory and nervous systems, in all amounting number reported in January 1897, and while that from acute respiratory diseases is of the late and which, with a few less these mortalities, has caused an increase in the number January 1897. Acute respiratory diseases caused 600 less than the average number of deaths prevalent. Consumption likewise caused less than the average mortality, but the same as are alone credited with causing a mortality above the average. Diphtheria caused 323 period and less than the average of the 12 months of 1897 it was the cause of nearly 4 mortality. Scarlet fever and measles alone of zymotic diseases show an increase, the former report the prevalence of epidemic jaundice. The mean average temperature was 32° for the precipitation of 4.19 inches, the average being 34.0, 24 parts of the state showing an excess

MONTHLY BULLETIN

SANITARY CONDITION	Population	Total number of deaths	Representing annual death rate per 1,000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
HUDSON VALLEY DIST.—(Con.)								
Montgomery	5,250	4	10.00	0	0	...	...	...
Haverstraw	7,714	5	5.00	1	20.0	...	...	...
Nyack	5,693	5	12.00	0	0	...	...	...
Hamapo	5,500	4	5.00	0	0	...	...	...
Rest of district		373	17.00	53	14.8	53.10	...	5
ADIRONDACK AND NORTHERN DISTRICT								
Totals		429	15.75	65	15.0	62.50	7	9
Watertown	17,000	25	17.50	6	24.0	240.00	...	3
Ellisburgh	4,222	3	9.00	1	33.0	...	...	...
Cape Vincent	2,000	8	25.00	0	0	...	...	...
Clayton	4,250	0	18.00	0	0	...	...	...
Ogdensburg	12,000	50	30.00	9	45.0	250.00	3	3
Gouverneur	6,000	7	14.00	2	28.6	...	...	...
Potsdam	4,000	8	24.00	2	25.0	125.00	...	...
Canton	6,018	18	25.00	0	0	...	...	...
Malone	5,000	4	10.00	1	25.0	...	...	...
Plattsburgh	7,010	10	17.10	2	20.0	...	...	...
Glens Falls	10,000	19	23.80	2	10.5	...	...	...
Whitehall	4,434	7	19.00	1	14.2	143.00	...	...
Fort Edward	4,882	4	12.00	0	0	...	...	...
Kingsbury	5,122	9	21.50	3	33.0	222.00	1	...
Granville	5,251	2	...	0	0	...	...	...
Salem	8,167	...	...	...	...	...	...	...
Greenwich	4,431	11	25.00	3	27.3	90.00	...	...
Rest of district		273	13.00	23	11.5	87.00	1	4
MOHAWK VALLEY DISTRICT								
Totals		429	13.00	65	15.7	55.00	1	0
Schenectady	24,374	17	9.00	5	30.0	60.00	...	...
Cobleski l.	3,436	4	14.00	0	0	...	...	...
Amsterdam	18,542	16	10.35	1	6.5	...	...	...
Fort Plain	3,000	7	20.00	1	30.0	...	...	...
Johnstown	7,768	9	14.00	2	29.2	...	...	...
Gloversville	14,694	22	18.00	5	22.5	45.00	...	1
Little Falls	12,000	12	12.00	1	8.3	...	...	...
Herkimer	5,150	6	14.40	1	16.7	187.00	...	...
Ilion	4,057	5	15.00	1	20.0	...	...	...
Utica	55,000	70	15.80	11	15.7	71.45	1	...
Whitestown	5,125	2	...	0	0	...	...	...
Rome	12,888	17	15.00	1	60.0	...	...	...
Boonville	3,512	4	13.75	1	25.0	...	...	...
Camden	3,375	5	16.32	0	0	...	...	...
Watford	5,524	13	24.00	3	23.0	375.00	...	4
Mechanicville	3,000	1	...	1	...	...	...	...
Ballston Spa	3,587	4	13.00	0	0	...	...	...
Saratoga Springs	12,000	13	13.00	1	7.5	...	...	...
Rest of district		195	14.00	31	16.0	50.00	...	3
SOUTHERN TIER DISTRICT								
Totals		450	13.00	65	14.2	41.25	...	5
Binghamton	34,514	52	18.45	10	19.0	18.00	...	1
Owego	5,000	4	10.00	0	0	250.00	...	...
Candor	3,535	5	17.00	0	0
Waverly	4,123	4	12.00	0	0
Elmira	30,800	42	19.80	11	18.5	30.00

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MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of —	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST.—(Con.)								
Horseheads	3,319	5	18.20	1	20.0	.....	.....	.....
HORNELLSVILLE	12,000	18	18.00	3	16.7	56.00	.....	1
Bath	3,261	3	25.00	0	.....	.....	.....	.....
CORNING	10,025	6	7.20	.....	16.7	.....	.....	.....
Wellsville	5,033	3	7.50	0	.....	.....	.....	.....
OLEAN	8,000	6	10.00	3	50.0	.....	.....	.....
Salamanca	3,700	.....	.....	.....	.....	.....	.....	.....
DUNKIRK	10,000	13	15.50	3	28.0	150.00	.....	.....
JAMESTOWN	18,627	16	10.50	3	18.5	.....	.....	.....
Westfield	3,000	4	16.00	0	.....	.....	.....	.....
Fredonia	3,400	3	11.50	0	.....	.....	.....	.....
Rest of district .....	.....	263	14.00	30	11.5	50.00	.....	2
EAST CENTRAL DISTRICT								
Totals .....	.....	464	16.00	60	13.5	75.00	.....	9
SYRACUSE								
Baldwinsville	3,040	5	20.00	0	.....	200.00	.....	.....
De Witt	5,182	5	12.00	0	.....	200.00	.....	1
Cortland	8,600	9	12.50	2	22.2	.....	.....	.....
Homer	3,000	4	16.00	1	33.0	250.00	.....	.....
Oneida	6,083	8	16.00	1	12.5	.....	.....	.....
Hamilton	4,110	7	20.75	1	14.2	142.85	.....	.....
Cazenovia	3,803	9	.....	1	11.0	.....	.....	.....
Brookfield	3,235	4	15.00	0	.....	.....	.....	.....
Norwich	6,000	3	.....	0	.....	.....	.....	.....
Oneonta	6,778	11	19.00	2	18.2	.....	.....	.....
Worcenter	2,670	4	19.00	0	.....	.....	.....	.....
Cooperstown	3,000	3	12.00	0	.....	.....	.....	.....
Walton	4,811	5	18.00	0	.....	.....	.....	.....
Delhi	3,000	2	8.00	0	.....	.....	.....	.....
Liberty	3,500	4	18.50	0	.....	.....	.....	.....
Rest of district .....	.....	268	15.20	30	11.5	80.00	.....	6
WEST CENTRAL DISTRICT								
Totals .....	.....	340	12.50	44	12.7	25.00	1	2
ACBURN								
ITHACA	18,460	12	11.00	2	16.7	.....	.....	.....
Hector	4,832	3	.....	0	.....	.....	.....	.....
Waterloo	4,350	2	.....	1	50.0	.....	.....	.....
Seneca Falls	6,500	7	18.00	1	14.2	.....	.....	.....
GENEVA	7,557	15	24.00	4	27.0	70.00	.....	.....
Canandaigua	5,868	8	16.50	0	.....	.....	.....	.....
Manchester	4,181	5	15.00	0	.....	.....	.....	.....
Phelps	5,150	2	.....	0	.....	.....	.....	.....
Penn Yan	4,254	9	24.00	0	.....	.....	.....	.....
Batavia	7,221	11	18.20	0	.....	.....	.....	.....
Dansville	3,758	3	8.00	0	.....	.....	.....	.....
Le Roy	3,000	3	12.00	1	33.3	.....	.....	.....
Warsaw	4,700	5	15.00	1	20.0	.....	.....	.....
Rest of district .....	.....	222	12.00	22	9.5	25.00	1	1
LAKE ONTARIO AND WESTERN DISTRICT								
Totals .....	.....	858	15.00	197	23.0	100.00	10	19
BUFFALO								
TONAWANDA	9,000	9	12.00	6	66.6	110.00	4	3
Amherst	4,000	6	18.00	0	.....	167.00	.....	1

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT—(Continued)								
NORTH TONAWANDA	9,000	7	10.00	3	42.8			
LOCEPORT.....	16,088							
NIAGARA FALLS	16,000	20	15.00	5	25.0	350.00		4
Medina	4,500	6	16.00	2	33.3			
Albion	4,588	5	13.50	1	20.0	200.00		
Brockport.....	8,742	5	18.40	1	20.0			
ROCHESTER.....	170,000	177	13.66	37	15.3	70.00	2	2
Palmyra	4,173	4	12.00	0				
Newark	2,000	5	25.00	1	20.0			
Lyons	5,197	4	8.00	1	25.0			
Clyde	2,000	6	24.00	2	33.3	165.00	1	
Oswego	22,000	21	12.00	5	24.5			
Fulton	4,214							
Richland	2,637	4	13.50	0				
Rest of district		235	13.50	25	10.5	75.00	3	1
Totals for the state		9,318	17.80	2,543	27.5	21.50	53	104
Average for Feb. for past 10 years		9,450	18.25	2,840	30.0	124.25	42	86
Totals for January, 1898		9,682	17.00	2,416	25.0	95.50	34	128

REMARKS.—The 9,318 deaths reported during the month represent a death rate per 1,000 corresponding month of last year, the average death-rate for this month for the past 10 years. The mortality of early life (under five years) increased from a daily average of 78 to that of mortality from zymotic diseases is the same as it was last month, about 30 deaths. There were 75 more from consumption and an increase from causes unclassified and from old deaths from zymotic diseases, and 360 fewer from consumption and acute respiratory diseases and unclassified causes show a material decrease. Grippe is estimated to have caused of the state 5.5 per cent of the mortality was from zymotic diseases, 8.5 per cent from consumption, 12.0 per cent from zymotic diseases, 12.0 from consumption, and 20.0 per cent from consumption, and less by 100 than in February, 1897. There is no noteworthy variation in the average for the month, the precipitation being about 3.00 inches, the average temperature was 34.00, and the average velocity of westerly winds of moderate velocity.

FOR FEBRUARY—(Concluded)

Malarial diseases	Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough	Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22	10	98	84	32	47	275	119	1,788	1,091	75	678	754	744	1,123	809	337	483	1,098
30	10	178	69	45	77	491	105	1,830	1,092	90	542	550	743	1,030	240	310	592	1,160
26	123	112	21	44	323	113	1,765	1,061	91	642	739	1,013	1,032	846	400	467	1,169	

population annually of 17 60, against one of 17 00 in the month preceding and of 19 00 in the years having been 18 35. The average daily mortality increased from 311 in January to 323, 90, and from a percentage of the total deaths of 25.0 to one of 27.5. The average daily were relatively 125 more deaths from acute respiratory diseases and 200 from other local diseases. Compared with February, 1906, the mortality is less by 94, there having been 125 fewer deaths during the month, against 400 in January and 700 in February 1897. In rural parts consumption, and 18.0 per cent from acute respiratory diseases, in the rest of the state, 10.0 from acute respiratory diseases. Diphtheria has a reported mortality of 275, which is less by 26 for the month, the mean relative humidity 77 per cent and the dewpoint 21°, with

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
HUDSON VALLEY DIST.—(Con.)								
Montgomery	5,552	5	14.00	0	...	...	...	...
Haverstraw	7,714	7	14.00	...	...	110.00	...	...
Nyack	5,603	5	18.00	...	...	425.00	...	1
Ramapo	5,600	5	14.00	...	...	...	...	...
Rest of district		298	17.00	50	17.0	85.00	2	9
ADIRONDACK AND NORTHERN DISTRICT								
Totals		444	14.75	68	15.2	55.00	...	6
Watertown	17,000	26	18.85	9	33.0	110.00	...	2
Ellisburgh	4,323	11	24.00	1	9.0	...	...	...
Cape Vincent	3,000	2	5.00	0	...	...	...	...
Clayton	4,360	5	14.50	1	30.0	200.00	...	1
Ogdensburg	12,000	15	15.00	5	38.3	365.00	...	1
Gouverneur	5,000	7	14.00	2	28.5	...	...	...
Potsdam	4,000	4	12.00	0	...	...	...	...
Canton	5,013	5	10.00	0	...	...	...	...
Malone	5,000	10	20.00	4	25.0	...	...	...
Plattsburgh	7,010	13	20.50	4	33.3	82.50	...	...
Glens Falls	10,000	19	22.75	1	5.9	...	...	...
Whitehall	4,454	3	9.00	3	...	...	...	...
Fort Edward	4,322	5	14.00	2	40.0	...	...	...
Kingsbury	5,113	10	23.50	2	20.0	200.00	...	...
Granville	5,281	2	...	0	...	...	...	...
Ralem	3,167	6	22.75	0	...	166.67	...	1
Greenwich	4,431	9	24.00	1	11.0	110.00	...	...
Rest of district		298	18.00	23	12.0	370.00	...	1
MOHAWK VALLEY DISTRICT								
Totals		468	15.50	83	18.0	95.00	6	7
Schenectady	24,374	29	14.00	8	30.0	65.00	...	...
Cobleskill	3,436	2	11.00	0	...	...	...	...
Amsterdam	13,642	25	15.15	7	28.0	140.00	9	...
Fort Plain	3,000	5	...	0	...	...	...	...
Johnstown	7,768	6	...	0	...	65.00	...	...
Gloversville	14,694	24	19.55	9	37.5	908.00	...	...
Little Falls	12,000	18	12.00	3	25.0	83.50	...	...
Herkimer	5,150	3	8.00	0	...	330.00	1	...
Ithaca	4,057	2	6.00	0	...	...	...	...
Utica	25,000	72	17.00	19	25.6	80.00	...	4
Whitestown	5,225	6	...	1	...	...	1	...
Rome	12,638	22	20.25	1	4.5	90.00	...	...
Bocouville	3,512	2	11.00	0	...	...	...	...
Camden	3,675	7	22.85	0	...	126.50	...	...
Waterford	5,522	12	25.00	4	30.0	230.00	...	...
Mechanicville	2,000	6	24.00	1	15.7	...	...	...
Ballston Spa	2,527	2	7.00	0	...	...	...	...
Saratoga Springs	12,000	12	18.00	2	25.0	154.00	...	...
Rest of district		298	14.00	28	18.5	55.00	2	3
SOUTHERN TIER DISTRICT								
Totals		490	15.00	79	16.5	85.00	3	10
Binghamton	24,514	27	17.85	14	25.0	...	1	4
Owego	6,000	8	16.00	0	...	...	...	...
Candor	3,525	5	20.00	2	40.0
Waverly	4,128	11	...	0
Elmira	20,000	44	17.50	11	25.0	100.00	...	1

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MONTHLY BULLETIN

SANITARY DISTRICTS.	Population	Total number of deaths	Representing annual death rate per 1,000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST.—(Continued)								
Horseheads	8,819							
Hornellville	12,000	15	15.00	4	26.7	300.00		
Bath	8,881	2		0				
Corning	10,026	8		2				
Wellsville	5,082	4	10.00	1	25.0			
Oran	8,000	5		1				
Salamanca	2,700	3	10.00	1	33.0			
Dunkirk	10,000	15	15.00	7	47.0	135.00		
Jamestown	18,637	28	15.00	5	17.8	79.00		
Westfield	8,000	3	12.00	0				
Fredonia	2,400	6	25.00	0				
Rest of district		279	14.00	31	12.0	68.00	2	4
EAST CENTRAL DISTRICT								
Totals		514	17.20	75	15.0	68.00	2	1
SYRACUSE	120,000	122	12.60	20	16.0	100.00	1	1
Baldwinsville	2,040	2	8.00	0				
De Witt	5,183	9	21.00	2	22.2			
Cortland	2,500	12	16.75	2	16.7			
Homer	2,000	2	12.00	0				
Oneida	6,082	7	14.00	0				
Hamilton	4,110	7	20.75	0				
Cazenovia	2,503	9	25.00	1	10.0			
Brookfield	2,225	2	11.00	0		330.00		
Norwich	6,000	8	16.00	2	37.5	125.00		
Oneonta	6,778	5	10.00	1	20.0			
Worcester	2,670	4	17.00	0				
Cooperstown	2,000							
Walton	4,811							
Delhi	2,000	4	12.00	0		250.00	1	
Liberty	2,500	2	20.75	0				
Rest of district		207	15.25	37	18.0	57.00	1	4
WEST CENTRAL DISTRICT								
Totals		415	16.35	54	12.5	32.50		2
AUBURN	25,000	28	15.75	9	25.0	55.50		
ITHACA	18,450	15	13.38	2	13.3	66.80		
Hector	4,822	5	18.69	0				
Watertown	4,350	7	19.90	0				
Seneca Falls	5,500	5		0				
GENEVA	7,557	6		2				
Canandaigua	6,565	5	11.00	0				
Manchester	4,181	5	17.70	1	16.7	166.70		1
Phelps	6,139	7	16.50	1	14.3			
Penn Yan	4,254	11	25.00	4	30.5			
Batavia	7,221	7	13.00	1	14.2			
Danville	2,758	7	25.00	1	13.5			
Le Roy	2,000	2	12.00	0				
Warsaw	4,700	2	20.00	1	13.5			
Rest of district		287	16.10	22	11.0	38.00		1

691

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MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT								
Totals.....		260	15.00	210	21.0	96.50	9	8
BUFFALO.....	270,000	227	10.70	69	27.9	113.15	4	11
TONAWANDA.....	8,000	9	12.00	2	25.0			
Amherst.....	4,000	5	15.00	0		200.00		1
NORTH TONAWANDA.....	9,000	7	10.00	5	71.0			
LOCKPORT.....	16,088	19	14.25	1	5.3	265.00	2	1
NIAGARA FALLS.....	16,030	30	22.50	5	16.5	200.00		6
Medina.....	4,500	7	18.70	1	14.9	147.85		
Albion.....	4,536	5	13.00	0		200.00		
Brockport.....	3,742	3	10.00	0				
ROCHESTER.....	175,000	199	14.40	50	25.0	25.00		
Palmyra.....	4,173	9	25.00	1				
Newark.....	3,000	3		0				
Lyons.....	6,127	13	24.00	4	30.0	290.00	1	
Clyde.....	3,000	6	24.00	2	3.0			
OSWEGO.....	22,000	27	14.30	4	14.7			
Fulton.....	4,214	12	25.00	1	8.5			
Richland.....	3,037	5	15.90	0		200.00		
Rest of district.....		269	13.50	45	17.5	75.00	2	5
Totals for the state.....		10,300	18.25	3,860	22.0	96.25	73	119
Average for March for past 10 years.....		10,660	19.20	3,100	22.0	138.75	52	85
Totals for February, 1898.....		9,313	17.60	2,543	27.5	91.50	53	164

REMARKS.—There was an increase in the mortality from the preceding month from 17.60 per annual mortality of 185,000 against one of 123,300 this month, there having been reported then mortality in early life and also in deaths from zymotic diseases. Of the latter, the increase deaths, which is nearly double the number of February, deaths were reported from every district; the total mortality is the same as that of last March. Whooping cough caused 19 February there were but 8 deaths from this cause outside the maritime district; during last in February, the Adirondack and Northern and the West Central districts making no returns reported from Cohoes, and its special prevalence has been in several other places (Massachusetts from typhoid fever, which is somewhat excessive. Diphtheria has the same moderate prevalence than half the average of the past 10 years. The total zymotic mortality was about 100 less and 600 less than in March of last year; other local diseases showing no material variation nearly 400 more deaths a year ago. Grippe was estimated to have caused 1,500 deaths last month to have caused about the same mortality as in February, viz., 600. The weather during average for twenty-eight years being 81°; there were an unusual number of clear days, the velocity.

FOR MARCH—(Concluded)

Malarial diseases	Small pox	Scarlet fever	Measles	Erysipelas	Whooping cough	Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
4	...	5		4	6	11	17	166	86	8	76	55	85	142	48	43	73	93
1	...	3	...	2	1	7	9	50	36	2	14	14	31	45	24	14	31	34
...	1	8	...	2	...	...	1	...	1	1	1
...	9	...	...	8	...	1	...	...	...	...	1
1	1	2	1	...	2	...	2	4	1	1	1	...
...	1	3	1	...	6	...	1	4	2	4	...	3
...	1	...	...	...	2	1	...	...	...	1	1	...
...	1	1	...	...	1	1	...	1	...	1	...	...
...	8	2	42	32	19	12	12	37	10	11	12	14
...	1	1	1	1	3	1	1	...	...	...	2
...	3	...	1	...	...	1	8	...	...	1	...
...	...	2	...	...	1	1	...	2	1	...	...	...	1	1	1	2	...	1
...	1	...	...	1	...	...	1	...	...	1	2
...	3	1	3	3	...	1	5	1	1	4	5
...	2	1	...	3	2	...	3	...	1	...	...
2	4	54	18	2	17	17	31	33	9	13	28	29
83	...	108	144	24	89	281	123	1,872	1,166	89	718	810	901	1,251	882	130	511	1186
33	12	192	128	47	100	500	125	2,165	1,268	118	606	611	635	1,160	240	300	660	1238
22	...	98	84	32	47	275	119	1,738	1,081	75	673	754	768	1,123	309	337	483	1098

1,000 population annually to 18.45, the death rate of March, 1897, was 20.50, representing an 1800 more deaths. Compared with February, there was a small increase in the relative has been in measles, whooping cough and cerebro-spinal meningitis. Measles caused 144 sanitary district except the Lake Ontario and Western, but the chief increase is in the maritime deaths against 47 in February, deaths are now reported from every sanitary district, while in March 112 deaths were credited to it. Cerebro-spinal meningitis caused 75 deaths against 53 from it, one-half the deaths occurring in the maritime district, an epidemic limited in area is reports show the same, it has a larger mortality than a year ago. There were 119 deaths as of recent months, the 230 deaths from it being less by 100 than in March 1897 and is less than a year ago. Acute respiratory diseases caused a smaller daily mortality than in February, except circulatory diseases, which are less by 230 unclassified causes were credited with March, there having then been a sudden increase in its prevalence. It may be estimated this the most of the month was unusually mild, the average temperature having been 40°, the precipitation was deficient, the mean barometer 30.19, winds southwesterly and of moderate

MONTHLY BULLETIN

SANITARY DISTRICTS		Population	Total number of deaths	Representing annual death rate per 1,000 population of -	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro spinal meningitis	Typhoid fever
HUDSON VALLEY DIST—(Con.)									
Montgomery	5,959	5	11 50	1	20.0				
Haverstraw	7,714	0		0					
Nyack	5,608	8	10 00	2	66.6	66.65			
Ramapo	8,600	6	12.00	2	33.0				
Rest of district		354	15 00	68	16.0	51.00	4	4	
ADIRONDACK AND NORTHERN DISTRICT									
Totals		379	18 00	58	15.2	57.50	1	4	
WATERTOWN	17,000	19	14 00	3	18.8	150.00		1	
Ellisburgh	4,222	4	11 50	1	25.0	250.00			
Cape Vincent	3,000	3	12 00	0					
Clayton	4,250	6	16 80	1	16.7				
ODDENSEBURGH	12,000	13	13 00	1	23.0	75.00			
Gouverneur	5,000	6	12 00	1	31.8				
Potsdam	4,000	2		0					
Canton	6,018	6	12 00	2	83.3	167.00			
Malone	5,800	9	21 25	6	55.5				
Plattsburgh	7,010	7	12 00	2	28.5				
Glens Falls	10,000	20	24 00	1	5.0	50.00	1		
Whitehall	4,434	8	20 60	1	12.5	125.00			
Fort Edward	4,882	2		0					
Kingsbury	5,113	9	21 50	1	11.0	111.10			
Granville	5,281	6	13 02	0					
Salem	3,167	0		0					
Greenwich	4,431	7	12.25	1	14.8	148.85		1	
Rest of district		282	18 00	35	14.0	62.00	1	2	
MOHAWK VALLEY DISTRICT									
Totals		514	17.00	1	18.0	65.80	5	8	
SCHENECTADY	24,874	35	18 87	4	11.5	30.00	1		
Cobleskill	3,426	1		0					
AMSTERDAM	18,542	18	12.00	6	83.3	111.10	1	1	
Fort Plain	8,000	4	16 00	1	25.0				
JOHNSTOWN	7,768	13	20 00	3	23.0				
GLOVERSVILLE	14,694	28	22 85	10	35.7	285.00			
LITTLE FALLS	12,000	15	15.00	3	18.3				
Herkimer	5,150	7	16 80	1	14.2				
Rhen	4,067	7	21 00	1	14.2				
UTICA	55,000	80	17 50	18	22.5	60.00			
Whitestown	5,285	5	11 00	1	20.0				
Rome	13,638	19	15.85	2	11.0	111.10			
Boonville	3,512	1		0					
Camden	3,375	8	25 00	1	12.5				
Waterford	5,522	15	30 00	7	48.0	70.00	1		
Mechanicville	3,000	5	20 00	0					
Bailton Spa	5,527	11	28 00	2	18.2	182.00	1		
Saratoga Springs	12,000	22	28.00	8	10.5	85.00			
Rest of district		210	10.00	29	14.0	57.00	1	7	
SOUTHERN TIER DISTRICT									
Totals		455	13.75	77	17.0	80.00	1	1	
BINGHAMTON	34,514	45	15.65	8	18.0	134.00		4	
Oneida	6,000	7	14 00	1	14.2				
Candor	3,525	8	24 00	2	25.0				
Waverly	4,128	7	20 00	1	14.8				
ELMIRA	30,000	46	18.40	6	11.0	85.00		3	

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of —	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST —(Con.)								
Horseheads.....	8,219	4	14.44	1	25.0	350.00		
Hornellsville.....	12,000	14	14.00	4	28.6	357.00		
Bath.....	8,261	6	22.00	0				
Corning.....	10,025	9	11.00	2	22.2	110.00	1	
Wellsville.....	5,032	7	16.80	1	14.3			
Orlean.....	8,000	7	11.00	1	14.3	149.85		
Salamanca.....	3,780	5	17.20	2	40.0			
Dunkirk.....	10,000	15	21.60	3	11.0			
JAMESTOWN.....	18,627	30	16.75	8	30.7	192.50		
Westfield.....	3,000	4	16.00	0	50.0	250.00		
Fredonia.....	3,400	5	17.65	0				
Rest of district.....		242	11.00	35	15.0	45.60		1
EAST CENTRAL DISTRICT								
Totals.....		559	18.00	194	23.5	60.00	1	7
SYRACUSE.....	180,000	145	14.80	31	31.5	110.00		4
Baldwinsville.....	3,040	2	5.00	0				
De Witt.....	5,189	2		0				
Cortland.....	8,830	13	18.00	2	15.4			
Homer.....	3,000	4	16.00	1	25.0	250.00		
Oneida.....	6,068	12	25.01	2	15.4	75.00	1	
Hamilton.....	4,110	7	21.00	1				
Cazenovia.....	3,808	9	24.00	1	11.0			
Brookfield.....	3,235	4	15.75	1	25.0			
Norwich.....	6,000	7	14.00	2	28.5			
Oneonta.....	8,776	8	15.50	1	12.5			
Worcester.....	8,870	3	12.00	0				
Cooperstown.....	3,000	3	12.00	0				
Walton.....	4,811							
Dahl.....	3,000	4	18.00	0				
Liberty.....	8,500	6	20.75	0				
Rest of district.....		306	15.00	43	14.0	45.00	1	2
WEST CENTRAL DISTRICT								
Totals.....		572	14.80	82	10.0	50.00	1	
AUBURN.....	25,000	37	18.00	3	8.0	35.00		
ITHACA.....	13,480	18	16.00	2	11.0	110.00		
Hector.....	4,882	5	18.00	0				
Watertown.....	4,350	5	18.00	1	16.7			
Seneca Falls.....	6,500	5	10.00	0		300.00		
GENEVA.....	7,557	9	14.30	2	22.5			
Canandaigua.....	5,838	5	19.00	0				
Manchester.....	4,181	3		0				
Phelps.....	6,150	6	14.40	1	16.7			
Penn Yan.....	4,254	4	19.00	1	25.0			
Batavia.....	7,921	3		0				
Dansville.....	3,758	10	26.90	1	10.0			
Le Roy.....	3,000	5	20.00	0		165.00		
Warsaw.....	4,700	2		0				
Rest of district.....		258	10.00	24	10.0	43.00	1	
LAKE ONTARIO AND WESTERN DISTRICT								
Totals.....		1,089	17.00	140	13.7	85.00	15	15
BUFFALO.....	260,000	401	18.86	122	85.0	85.00	3	7
TONAWANDA.....	9,080	7	10.00	0				
Amherst.....	4,080	7	21.00	3	26.5			

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1,000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT (Continued.)								
NORTH TORAWANDA.....	9,000	7	10.00	1	14.3	285.00	..	1
LOCKPORT.....	15,088	31	29.00	1	3.4	300.00	..	4
NIAGARA FALLS.....	16,000	24	18.00	9	37.5	53.00	..	1
Medina.....	4,500	8	21.35	1	12.5	..	..	..
Albion.....	4,536	8	20.80	5	62.5	125.00	..	..
Brockport.....	3,742	2	..	0	..	..	..	..
ROCHESTER.....	175,000	216	75.01	44	20.4	46.30	..	..
Palmyra.....	4,123	7	20.50	0	..	..	..	..
Newark.....	3,000	6	24.00	0	..	..	..	..
Lyons.....	6,27	12	23.50	2	25.0	52.50	..	..
Clyde.....	3,040	..	..	..	..	..	..	..
Oswego.....	22,000	27	14.75	4	14.8	150.00	..	..
Pulten.....	4,214	6	24.50	1	12.5	..	..	..
Richland.....	3,637	1	..	0	..	..	..	..
Rest of District.....	..	268	14.0	36	11.5	40.00	..	..
Totals for the State.....	10,000	10,000	18.05	2,783	27.8	93.84	82	60
Average for April for past 10 years.....	10,435	18,435	18.40	3,140	30.2	190.45	65	86
Totals for March, 1898.....	10,300	18,300	18.25	2,860	28.0	96.25	73	119

REMARKS.—There was a daily average mortality of 833 during the month, which is identical occurred, and a death rate of 19.00 against one of 18.15 this month. The variations in mortality somewhat less this month, 9.4 per cent of the total mortality, against 9.5 last month and 9.6 central parts of the state show comparative freedom from it; the limited outbreak of it in caused very few deaths outside the maritime district, although its mild prevalence more against 144 in March and 99 last April. Whooping-cough increases and is prevalent in all parts has further decreased, to 252 deaths, or 10 less than in April, 1897; 9.5 per cent of the total cost of the deaths were due to it; it usually decreases in April. The infant mortality was the Consumption caused 11.0 per cent of deaths from all causes, in the Southern tier district 7.5 mortalities from it. From acute respiratory diseases there was the same mortality in each of of diseases. Other local diseases have lower mortalities than in last month, but not less than continues to be reported and probably exaggerated the mortality of this month about 380, the state was unusually cold and damp, but the average for the state shows the normal mean barometer of 30.00, and temperature 48.7, the normal being 4° for the entire month.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

(Cities are printed in small caps, villages in italics and towns in Roman)

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
MARITIME DISTRICT								
Totals		5,600	18.50	1,924	34.5	114.00	89	19
CITY OF NEW YORK								
Totals	2,428,899	8,193	17.75	1,894	35.0	113.50	■	16
BOROUGH OF MANHATTAN	1,911,755	2,924	18.00	1,088	37.0	101.50	24	6
BOROUGH OF THE BROOK	187,075	883	26.00	99	33.0	228.75	3	7
BOROUGH OF BROOKLYN	1,197,100	1,689	16.55	549	39.6	115.00	11	3
BOROUGH OF QUEENS	128,642	301	18.53	78	36.0	100.00	—	—
BOROUGH OF RICHMOND	84,827	82	16.00	21	25.0	125.00	—	—
Oyster Bay	15,000	80	20.00	7	28.0	77.00	—	—
Hempstead	24,000	22	16.60	7	22.0	55.00	—	—
North Hempstead	8,724	11	15.16	2	18.2	90.00	—	—
Southold	7,671	5	10.00	1	20.0	—	—	—
Sag Harbor	3,080	7	24.00	1	14.3	—	—	—
Huntington	5,252	13	19.00	0	—	—	—	—
Brookhaven	12,500	12	11.00	2	16.7	—	—	—
Yonkers	40,000	—	—	—	—	—	—	—
Greenburgh	12,000	21	16.00	7	35.0	182.50	—	—
MOUNT VERNON	15,512	21	16.25	11	48.5	208.00	—	—
Port Chester	7,547	8	18.00	4	50.0	—	—	—
Sing Sing	9,500	14	18.00	2	14.3	142.85	—	—
New Rochelle	8,217	16	21.00	8	50.0	250.00	—	—
Peekskill	9,678	18	16.25	6	45.0	75.00	—	—
White Plains	4,042	6	18.00	2	33.3	—	—	—
Rest of district		103	12.50	20	20.0	70.00	1	—
HUDSON VALLEY DISTRICT								
Totals		964	17.50	304	31.0	75.00	10	17
ALBANY	100,000	167	20.00	38	28.5	54.00	1	3
CODD	24,000	29	14.60	8	30.0	150.00	1	1
TROY	65,000	111	20.50	31	29.0	108.12	1	1
WATERVLIET	12,000	18	16.60	5	24.0	110.00	1	1
Green Island	4,500	8	20.00	2	25.0	125.00	1	—
Lansingburgh	10,850	12	14.00	2	16.7	—	—	—
Hornick Falls	7,014	5	10.00	1	20.0	—	—	—
RENSSELAER	7,462	14	25.00	3	21.4	271.50	—	1
Coxsackie	3,124	4	18.00	0	—	—	—	—
Catskill	5,000	12	28.00	2	16.7	—	—	—
Hudson	9,688	16	20.00	2	12.5	—	—	—
KINGSTON	25,500	24	11.00	6	25.0	—	—	—
Ellenville	3,000	2	12.00	1	50.0	—	—	—
Marbletown	3,669	5	18.00	1	20.0	200.00	—	1
Rosendale	0,125	2	—	1	50.0	—	—	—
Esopus	5,685	9	21.50	1	11.0	222.20	—	1
Saugerties	4,227	11	25.00	1	9.1	21.00	—	—
POUGHKEEPSIE	22,340	25	18.00	4	11.5	87.50	1	—
Fishkill	17,726	13	14.60	2	15.0	—	—	—
Wappinger Falls	3,718	5	16.25	3	60.0	200.00	—	—
NEWBORG	24,536	32	15.50	9	28.5	35.00	—	—
Port Jervis	9,327	14	17.00	1	7.0	—	—	—
MIDDLETOWN	11,652	12	13.00	4	33.3	—	—	—
Warwick	6,000	6	12.00	2	33.3	165.00	—	—
Goshen	4,616	8	—	0	—	—	—	—

YORK STATE BOARD OF HEALTH

districts, cities, villages and towns during May, 1898

[type. For boundaries of Sanitary districts see Annual summary]

	Malarial diseases	Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough	Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
22	103	65	18	73	179	80	250	598	50	563	461	422	545	180	284	104	819		
21	99	78	17	69	172	76	917	609	46	371	442	378	506	168	252	78	777		
20	49	34	7	35	85	53	566	355	31	205	268	202	253	109	148	41	470		
19	29	18	1	23	3	10	80	84	5	11	13	15	18	7	16	1	85		
18	21	27	8	24	78	13	379	196	7	137	183	137	195	51	74	23	250		
17	6	3	1	2	6	1	40	26	2	15	23	16	28	4	9	1	17		
16	1	1					12	4	1	3	8	7	12	3	5	7	5		
15	1						2	2	1	1		2	3	1	1	1	4		
14							1	1	1			1	1			1	1		
13							1	1	1			2	2	1	1	2	3		
12							1	1	1			1	1	1	1	1	4		
11							1	1	1			1	1	1	1	1	1		
10							1	1	1			1	1	1	1	1	1		
9							1	1	1			1	1	1	1	1	1		
8							1	1	1			1	1	1	1	1	1		
7							1	1	1			1	1	1	1	1	1		
6							1	1	1			1	1	1	1	1	1		
5							1	1	1			1	1	1	1	1	1		
4							1	1	1			1	1	1	1	1	1		
3							1	1	1			1	1	1	1	1	1		
2							1	1	1			1	1	1	1	1	1		
1							1	1	1			1	1	1	1	1	1		
0							1	1	1			1	1	1	1	1	1		
1							1	1	1			1	1	1	1	1	1		
2							1	1	1			1	1	1	1	1	1		
3							1	1	1			1	1	1	1	1	1		
4							1	1	1			1	1	1	1	1	1		
5							1	1	1			1	1	1	1	1	1		
6							1	1	1			1	1	1	1	1	1		
7							1	1	1			1	1	1	1	1	1		
8							1	1	1			1	1	1	1	1	1		
9							1	1	1			1	1	1	1	1	1		
10							1	1	1			1	1	1	1	1	1		
11							1	1	1			1	1	1	1	1	1		
12							1	1	1			1	1	1	1	1	1		
13							1	1	1			1	1	1	1	1	1		
14							1	1	1			1	1	1	1	1	1		
15							1	1	1			1	1	1	1	1	1		
16							1	1	1			1	1	1	1	1	1		
17							1	1	1			1	1	1	1	1	1		
18							1	1	1			1	1	1	1	1	1		
19							1	1	1			1	1	1	1	1	1		
20							1	1	1			1	1	1	1	1	1		
21							1	1	1			1	1	1	1	1	1		
22							1	1	1			1	1	1	1	1	1		

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
HUDSON VALLEY DIST—(Con.)								
Montgomery.....	5,359	7	15.00	3	42.8	142.88	—	—
Haverstraw.....	7,714	4	—	1	—	—	—	—
Nyack.....	5,503	5	—	4	—	—	—	—
Ramapo.....	5,590	8	14.50	2	25.0	—	—	—
Rest of district.....	—	564	15.00	65	17.0	90.00	4	3
ADIRONDACK AND NORTHERN DISTRICT								
Totals.....	—	427	15.00	59	15.0	75.00	2	9
WATERTOWN	17,060	20	18.85	4	15.4	75.00	—	2
Ellisburgh.....	4,225	0	—	—	—	—	—	—
Cape Vincent.....	3,000	4	16.00	0	—	—	—	—
Clayton.....	4,250	3	9.00	0	—	—	—	—
ODONNELL.....	12,000	23	23.00	4	18.0	225.00	1	4
Gouverneur.....	5,000	6	12.00	1	16.7	—	—	—
Potsdam.....	4,000	6	24.00	2	33.0	125.00	—	—
Canton.....	8,018	11	22.00	1	9.0	—	—	—
Malone.....	5,000	6	14.50	1	18.2	—	—	—
Plattsburgh.....	8,460	10	14.10	5	50.0	—	—	—
Glens Falls.....	10,000	10	12.00	2	20.0	100.00	—	—
Whitehall.....	4,434	0	—	—	—	—	—	—
Fort Edward.....	4,368	9	17.00	1	16.7	—	—	—
Kingsbury.....	5,112	2	—	2	—	—	—	—
Granville.....	5,281	3	10.00	1	33.0	—	—	—
Salem.....	3,187	0	—	—	—	—	—	—
Greenwich.....	4,481	6	16.25	1	16.7	—	—	—
Rest of district.....	—	303	14.20	44	14.5	60.00	1	3
MOHAWK VALLEY DISTRICT								
Totals.....	—	488	16.75	79	16.3	60.00	5	4
BOHNKROTADY	21,874	27	14.25	2	7.5	35.00	1	—
Cobleskill.....	8,430	9	25.00	1	11.1	—	—	—
AMSTERDAM.....	18,544	34	2.85	7	20.0	30.00	—	—
Fort Plain.....	3,000	1	—	0	—	—	—	—
JOHNSTOWN.....	7,768	7	11.00	2	28.5	—	—	—
GLOVERSVILLE.....	14,634	28	23.00	10	35.0	142.85	1	—
LITTLE FALLS.....	12,000	11	11.00	3	27.2	—	—	—
Herkimer.....	5,180	6	19.00	1	12.5	—	—	—
Ilion.....	4,037	5	—	1	—	—	—	—
UTICA.....	55,000	69	15.00	16	23.0	45.00	—	3
Whitestown.....	5,225	3	—	0	—	—	—	—
Rome.....	18,688	21	18.40	1	5.0	50.00	—	—
Boonville.....	3,512	1	—	0	—	—	—	—
Camden.....	3,675	0	25.00	2	22.2	—	—	—
Waterford.....	5,522	11	—	4	—	—	1	1
Mechanicville.....	3,000	5	24.00	0	—	165.00	—	—
Ballston Spa.....	3,527	4	13.00	2	50.0	—	—	—
Saratoga Springs.....	19,000	31	21.00	2	10.0	—	—	—
Rest of district.....	—	212	10.00	25	12.0	45.00	2	1
SOUTHERN TIER DISTRICT								
Totals.....	—	501	15.00	68	18.6	70.00	3	6
BINGHAMTON	34,514	43	14.57	5	12.0	118.00	1	2
Oswego.....	5,000	10	20.00	4	40.0	—	—	—
Candor.....	3,525	4	18.50	0	—	—	—	—
Waverly.....	4,123	4	12.00	1	25.0	—	—	—
ELMIRA.....	30,000	37	18.60	3	8.0	75.00	—	1

705

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MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST —(Con.)								
Horseheads.....	3,315	8	24.00	0	.....	125.00		
HORNELLVILLE.....	12,000	20	20.00	0	45.0	350.00		
Bath.....	3,261	7	24.00	1	14.3			
CORNING.....	10,025	9	11.00	1	11.0			
Wellsville.....	5,033	11	25.00	1	9.0			
OLEAN.....	8,000	13	19.50	3	23.0	160.00		
Salamanca.....	3,700	6	18.00	1	16.7			
DUNKIRK.....	10,000	11	13.30	3	23.5	90.00		
JAMESTOWN.....	18,637	26	17.03	3	11.8	150.00		
Westfield.....	3,000	6	20.00	0	.....		
Fredonia.....	3,400	4	14.10	1	25.0			
Rest of district.....		234	12.50	32	11.5	50.60	1	1
EAST CENTRAL DISTRICT								
Totals.....		606	16.50	78	14.0	54.00	3	3
SYRACUSE.....	120,000	180	15.00	24	18.5	70.00		
Baldwinsville.....	2,040	1	.....	0	.....		
De Witt.....	6,182	2	.....	.....	.....
Cortland.....	8,600	13	18.00	2	23.0			
Homer.....	3,000	7	24.00	1	14.3			
Oneida.....	6,033	8	16.00	1	12.5			
Hamilton.....	4,110	6	18.00	1	18.7			
Cazenovia.....	3,303	6	18.50	2	33.3			
Brookfield.....	3,785	1	.....	0	.....		
Norwich.....	1,000	11	22.00	1	9.0			
Oneonta.....	8,000	11	16.50	3	18.2	181.80		
Worcester.....	2,670	2	.....	0	.....		
Cooperstown.....	3,000	1	.....	0	.....		
Walton.....	4,811	3	20.00	1	12.5	125.00		
Deht.....	3,000	0	24.00	0	.....		
Liberty.....	2,500	3	25.00	2	25.0	125.00		
Rest of district.....		227	15.00	35	12.0	60.00	2	7
WEST CENTRAL DISTRICT								
Totals.....		359	14.30	63	17.5	42.50	3	3
AUBURN.....	25,000	30	18.50	12	20.5	25.00	1	
ITHACA.....	13,460	9	.....	3	.....		1	
Hector.....	4,832	2	.....	0	.....		
Watertown.....	4,360	10	25.00	1	10.0			
Seneca Falls.....	6,500	10	18.50	5	50.0			
GENEVA.....	10,000	7	8.50	2	28.5			
Canandaigua.....	5,668	5	10.00	0	.....		
Manchester.....	4,151	11	24.00	3	27.3	190.00		
Phelps.....	5,150	4	10.00	0	.....		
Penn Yan.....	4,254	7	30.00	2	28.5			
Batavia.....	7,221	16	18.00	2	13.3	133.30		
Danville.....	3,758	6	.....	0	.....		
Le Roy.....	3,600	6	20.00	0	.....		
Warsaw.....	4,700	6	15.00	3	50.0	167.90		
Rest of district.....		223	10.00	30	13.5	38.00	1	1
LAKE ONTARIO AND WESTERN DISTRICT								
Totals.....		1,001	16.00	230	24.0	82.00	16	23
BUFFALO.....	360,000	438	14.15	140	34.7	92.56	8	10
TONAWANDA.....	9,000	11	14.50	4	37.5	190.00		
Amherst.....	4,000	3	9.00	0			

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MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT—(Continued)								
NORTH TONAWANDA	9,000	9	12.00	3	33.3	322.20	2	...
LOCKPORT	16,088	18	13.50	1	5.0	330.00	...	...
NIAGARA FALLS	16,000	19	14.25	2	10.0	100.00	1	...
Medina	4,500	4	11.50	0	...	...	...	...
Aldon	4,536	8	9.00	1	33.0	330.00	...	...
Brackport	5,743	5	15.00	...	...	...	...	...
ROCHESTER	175,000	186	12.52	29	15.8	65.00	1	...
Palmyra	4,173	1	...	0	...	...	...	...
Newark	8,000	7	25.00	4	57.0	...	...	...
Lyons	6,127	5	10.00	0	...	...	...	...
Clyde	3,000	2	9.00	0	...	...	...	...
OSWEGO	23,000	21	12.00	4	20.0	100.00	1	1
Fulton	4,214	...	...	...	...	...	...	...
Richland	3,537	11	18.00	2	19.2	...	...	...
Rest of district .....	...	264	14.00	40	15.6	60.00	3	5
Totals for the state	9,743	...	17.15	2,890	27.0	23.00	81	86
Average for May for past 10 years	9,328	...	18.00	2,875	30.0	130.00	65	78
Totals for April, 1896	10,000	...	18.15	2,768	28.0	93.85	82	80

REMARKS. There has been a small decrease in the mortality from the two preceding years. The death rate was 17.15 against 18.75 in April and 17.00 in May, 1897. The decrease in the diminution amounting to about 800, this year there being less than 800. The mortality of occurring under the age of five years. There were 900 deaths from zymotic diseases, a number of these. Scarlet fever is the only one of this class which shows an increase; there were 113 deaths has further decreased, and the 231 deaths from it are but half the average number for generally distributed throughout the state. Other zymotic diseases show no deviation from into this state the last of April of smallpox by a traveling theatrical troupe in which was a visited 20 places; the troupe, which traveled in its own cars and had its own exhibition contracted by others have developed at Ithaca, Geneva, Buffalo, Dansville, Locke, Union are in quarantine and the further spread is not anticipated; none of them have proved fatal. Last May, and there is a small increase in deaths from other local diseases over the number of 2800 deaths, and the current epidemic, commencing in January, is practically ended. The moderate excess of rainfall, an unusually small number of clear days, with high relative hu-

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPS, villages in italics and towns in Roman

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
MARITIME DISTRICT		5,198	17 00	1,865	37 6	132.65	75	1
Totals.....								
CITY OF NEW YORK	3,438,509	4,851	17 26	1,865	37.5	152.25	73	28
Totals								
BOROUGH OF MANHATTAN	1,911,755	2,738	1 35	1,007	36.8	232.50	25	1
BOROUGH OF THE BRONX	137,175	265	23 60	78	30.0	163.50	1	1
BOROUGH OF BROOKLYN	1,197,100	1,575	16 00	680	41.8	90 10	66	4
BOROUGH OF QUEENS	1,8,048	190	18 80	65	48.7	135.00	...	...
BOROUGH OF RICHMOND	64,927	82	15 75	23	28.0	85.35	...	...
Oyster Bay	15,000	15	12 00	3	20.0	...	...	...
Hempstead	24,300	52	12 00	4	19.2	90.00	1	...
North Hempstead	8,736	11	16 18	6	55.0	303.60	...	...
Southold	2,671	4	10 00	0	...	250.00	...	...
Sag Harbor	3,000	3	19 00	0	...	...	...	...
Huntington	8,253	10	15 00	2	20.0	100 00	...	...
Brookhaven	13,000	9	...	1	11 0	110 00	1	...
YONKERS	40,000	60	18.85	23	34.7	145 00	...	1
Greenburgh	12,000	9	10 00	0	...	250.00	...	...
MOUNT VERNON	15,513	24	19 50	7	33.0	250.00	...	...
Port Chester	7,547	12	19 00	10	83.5	500.00	...	...
Sing Sing	9,500	8	11 00	2	25.0	...	...	...
New Rochelle	8,217	10	15 00	5	50.0	400.00	...	...
Peeckskill	9,678	22	24 00	4	20.0	200 00	...	...
White Plains	4,043	7	21 00	1	14.2	...	...	...
Rest of district		115	18.50	22	30.0	120.00	...	...
HUDSON VALLEY DISTRICT		745	14 50	144	19.4	100.00	9	1
Totals								
ALBANY	100,000	131	15 75	87	28.5	115.35	2	1
CORRUES	21,000	31	15 50	5	26.0	165 00	2	1
TROY	65,000	80	15 00	24	30.0	100.00	1	1
WATERVLIET	13,000	16	15 00	1	6.2	62.50	...	...
Green Island	4,500	7	18 50	4	57.0	285.00	1	...
Lansingburgh	10,550	18	20 50	4	22.2	110.00	...	...
Hornick Falls	7,014	7	12 00	1	14.2	...	...	...
RENSSELAER	7,432	9	15 00	8	33.3	445.00	...	1
COXSACKIE	3,284	4	18 00	1	25.0	...	...	...
Catskill	5,000	14	30 00	3	30.0	142.85	...	...
HUDSON	9,639	9	12 00	0	...	...	...	...
KINGSTON	25,300	28	13 25	4	14.2	112.00	...	1
Ellenville	3,000	4	16 00	1	25.0	250.00	...	...
Marbletown	3,639	4	13 50	1	25.0	...	...	...
Rosendale	6,135	3	...	...	...	...	...	...
Esopus	5,036	3	...	0	...	...	...	1
Saugerties	4,237	4	12 00	...	...	...	...	...
POUGHKEEPSIE	23,300	8	15 00	5	16.5	100.00	...	...
Fishkill	11,736	10	12 00	3	30.0	100 00	...	...
Wappinger Falls	3,718	2	8 00	0	...	...	...	...
NEWBURGH	24,536	22	12 00	4	16.7	125 00	1	...
Fort Jervis	9,327	16	20 50	2	12.5	62.50	...	...
MIDDLETOWN	11,618	23	23 00	5	22.7	90.00	...	1
Warwick	8,000	4	8 00	1	25.0	...	...	...
Goshen	4,646	6	15 50	0	...	...	...	...

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of -	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro spinal meningitis	Typhoid fever
HUDSON VALLEY DIST.—(Con.)								
Montgomery	5,959	7	16.00	0				
Haverstraw	7,714							
Nyack	6,608	6	18.00	0		167.00		1
Ramapo	6,600	5	11.00	1	20.0			
Rest of district		247	10.50	30	12.5	75.00	2	3
ADIRONDACK AND NORTHERN DISTRICT								
Totals		334	13.00	67	17.3	87.50	2	4
Watertown	17,000	14	10.00	2	14.2	71.50		1
Ellisburgh	4,223	5	15.00	0				
Cape Vincent	5,000	3	12.00	0				
Clayton	4,250	4	12.00	1	25.0			
Ogdensburg	12,000	19	19.00	6	32.0	250.00	1	3
Gouverneur	6,000	6	12.00	1	16.0	145.00		
Potsdam	4,000	6	15.00	2	40.0	200.00		
Canton	6,012	9	18.00	2	22.0			
Malone	5,000	12	25.00	4	33.0	165.00		
Plattsburgh	5,480	5	9.00	2	40.0	400.00		1
Glens Falls	10,000	16	19.30	3	19.0	125.00		
Whitehall	4,434	3		3		125.00		
Fort Edward	4,392	6	17.50	0				
Kingsbury	5,112	11	24.00	2	19.0	90.00	1	
Granville	5,221	3	7.00	1	33.0			
Balem	3,167							
Greenwich	4,431	4	11.00	1	25.0	250.00		
Rest of district		259	12.00	37	14.0	60.00		4
MOHAWK VALLEY DISTRICT								
Totals		408	14.10	82	20.5	72.50	7	1
Schenectady	24,374	24	16.75	13	58.2	60.00		
Cobleskill	2,486	2		0				
Amsterdam	18,542	23	15.00	7	30.0	145.00	1	
Fort Plain	8,000	2	8.00	0				
Johnstown	7,768	9	14.00	0		110.00		
Gloversville	14,594	20	16.35	6	30.0	100.00		
Little Falls	12,000	10	10.00	0		100.00	1	
Herkimer	5,120	5	12.00	0				
Rion	4,057	5	15.00	1	20.0			
Utica	55,000	75	16.25	24	32.0	45.00	1	
Whitestown	5,225	4	10.00	1	25.0	250.00		
Rome	13,838	16	14.10	2	12.5	250.00		
Boonville	8,519	3	11.00	0				
Camden	5,675	2	8.00	0				
Waterford	5,582	11	24.85	6	55.5	182.00		
Mechanicville	3,000	2	8.00	1	50.0			
Ballston Spa	8,627	2	8.00	0				
Saratoga Springs	12,000	23	28.00	5	22.0	65.00	1	
Rest of district		154	10.00	16	10.5	55.00	2	1
SOUTHERN TIER DISTRICT								
Totals		804	12.25	59	14.5	60.00	2	1
Binghamton	24,514	48	16.75	8	16.0	175.00		3
Owego	6,000	6	12.00	0				
Candor	5,525	2	8.00	0				
Waverly	4,138	2	6.00	0				
Elmira	30,000	23	13.25	3	9.0	60.00	1	1

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of —	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST.—(Con.)								
Horseheads	3,319	8	11.50	0	0.0	0.0	0	0
HORNELLSVILLE	12,000	15	15.00	4	26.5	0.0	0	0
Bath	3,281	3	11.50	1	33.0	0.0	0	0
CORNING	10,025	11	12.50	0	0.0	90.00	0	0
Wellsville	5,083	4	10.00	1	25.0	0.0	0	0
OLEAN	8,000	1	0.0	0	0.0	0.0	0	0
Salamanca	3,700	4	13.50	0	0.0	0.0	0	0
DUNKIRK	10,000	13	15.00	7	52.0	0.0	0	0
JAMMSTOWN	18,627	19	13.00	4	21.0	50.00	0	0
Westfield	3,000	3	12.00	1	33.3	330.00	0	0
Fredonia	3,400	5	16.75	0	0.0	0.0	0	0
Rest of district		222	12.00	30	13.0	0.0	1	0
EAST CENTRAL DISTRICT								
Totals		399	12.25	51	12.0	75.00	4	0
SYRACUSE	120,000	113	11.50	21	19.0	116.00	2	0
Baldwinsville	3,040	7	25.00	2	28.5	225.00	0	0
De Witt	5,182	8	19.00	0	0.0	0.0	0	0
Cortland	8,600	9	13.00	2	22.2	0.0	0	0
Homer	3,000	4	16.00	1	25.0	0.0	0	0
Oneida	6,083	3	6.00	0	0.0	330.00	0	0
Hamilton	4,110	4	12.00	0	0.0	250.00	0	0
Cazenovia	3,803	4	13.00	0	0.0	0.0	0	0
Brookfield	3,235	4	15.00	0	0.0	0.0	0	0
Norwich	6,000	6	12.00	0	0.0	165.00	0	0
Oneonta	8,000	0	13.50	1	11.0	0.0	0	0
Worcester	2,670	2	12.00	0	0.0	0.0	0	0
Cooperstown	3,000	1	0.0	0	0.0	0.0	0	0
Walton	4,911	5	13.00	3	60.0	200.00	0	0
Delhi	3,000	4	16.00	0	0.0	0.0	0	0
Liberty	3,500	7	24.00	0	0.0	0.0	0	0
Rest of district		209	12.00	21	9.0	50.00	2	0
WEST CENTRAL DISTRICT								
Totals		33	12.60	27	9.0	16.75	1	0
AUBURN	25,000	19	10.00	0	0.0	0.0	0	0
ITHACA	13,460	13	12.00	3	23.0	75.00	0	0
Hector	4,832	3	8.00	0	0.0	330.00	0	0
Waterloo	4,350	5	14.50	1	20.0	0.0	0	0
Seneca Falls	6,500	9	16.65	2	22.0	0.0	0	0
GENEVA	10,000	12	14.40	2	16.7	82.50	0	0
Canandaigua	5,868	5	12.00	0	0.0	0.0	0	0
Manchester	4,181	3	9.00	0	0.0	0.0	0	0
Phelps	5,150	0	0.0	0	0.0	0.0	0	0
Penn Yan	4,254	5	15.00	1	20.0	0.0	0	0
Batavia	7,221	11	18.30	0	0.0	0.0	0	0
Dansville	3,758	6	0.0	0	0.0	0.0	0	0
Le Roy	3,000	3	12.00	0	0.0	0.0	0	0
Warsaw	4,700	8	20.00	1	12.5	0.0	0	0
Rest of district		211	12.50	17	8.0	10.00	1	0
LAKE ONTARIO AND WESTERN DISTRICT								
Totals		802	13.00	173	21.5	83.50	9	0
BUFFALO	360,000	305	10.16	91	30.0	110.00	2	0
TONAWANDA	9,000	12	16.00	2	16.7	0.0	0	0
Amherst	4,000	8	24.00	2	25.0	125.00	0	0

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT—(Continued)								
NORTH TONAWANDA	9,000	14	16.50	4	28.5	75.00	.....	1
LOCKPORT	16,088	15	.....	5	33.3	.....	.....	1
NIAGARA FALLS	16,080	18	14.00	5	45.0	.....	.....	1
Medina	4,500	4	11.00	1	25.0	.....	.....	1
Albion	4,586	2	.....	0	.....	.....	.....	1
Brockport	5,748	2	.....	1	50.0	.....	.....	1
ROCHESTER	175,000	156	.....	23	19.5	120.00	5	1
Palmyra	4,178	8	18.00	2	25.0	.....	.....	1
Newark	3,000	8	26.00	2	25.0	.....	.....	1
Lyons	6,127	6	12.00	0	.....	167.00	.....	1
Clyde	3,000	7	25.00	2	28.5	.....	.....	1
Oswego	22,000	14	8.00	2	14.2	71.50	.....	1
Fulton	4,314	.....	.....	.....	.....	.....	.....	1
Richland	5,637	4	18.50	0	.....	.....	.....	1
Rest of district .....	.....	219	12.00	25	11.7	51.00	2	1
Totals for the state .....	.....	8,637	16.00	2,558	36.0	132.50	109	70
Average for June for past 10 years .....	.....	8,995	17.50	2,348	27.5	190.00	46	88
Totals for May, 1898 .....	.....	9,748	17.15	2,696	27.0	98.00	81	86

REMARKS.—June is always, next to November, the month of least mortality in this state; has been 294. The daily average for the past month, reported, has been 288, that of the five 1100 fewer deaths reported, of which decrease 890 occurred in the Maritime district; the under five years of age. Aside from diarrheal diseases there were 100 fewer deaths from acute respiratory diseases there were hardly more than half as many deaths, there having Diseases of the digestive organs caused more deaths than in May, but other local diseases caused an increase of 100 over May. Fewer deaths from old age occurred this month. Maritime district reporting 160 fewer, and in the entire state the reported mortality is less by part of this decrease is in the mortality of early life, and one half of it is in zymotic diseases, caused 875 deaths, which is but half the usual mortality for June. Diphtheria caused 175 deaths, the same number as in May and double that of last June. Cerebro-spinal meningitis is excessive, all the sanitary districts reporting it, but the increase is mainly in the Maritime developed in no new localities since the report of last month. All of the 10 reported are probably soon to be relieved. Of the 50 cases in all, eight occurred in the troupe importing for the month was one degree above the normal of 66°, the average highest being 90°, lowest was excessive in the eastern part of the state; winds southwesterly.

FOR JUNE—(Concluded)

Malaria diseases	Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough	Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
...	1	...	1	...	...	2	...	...	...	...	...	...	...
...	1	4	...	...	1	...	...	4	...	...	...	1
...	2	1	...	...	1	...	4	...	...	...	4
...	1	...	...	...	...	1	...	...	...	1
1	...	1	...	...	6	...	8	16	16	3	19	10	11	28	6	10	16	10
...	1	...	...	1	1	1	2	...	...	1	2
...	2	...	...	1	2
...	1	...	...	...	...	1	1	...	...	...	...	1	...	2	1	2
...	2	2	1	1	...	3	1
...	1	2	...	...	...	...	...
...	1	...	...	7	14	10	5	25	18	36	32	11	11	23	16
22	...	83	99	17	111	174	878	657	1,007	56	783	656	790	1,031	867	581	361	1062
47	7	132	138	27	60	390	775	685	968	32	533	516	645	1,048	865	500	356	1205
27	...	118	109	80	112	233	127	1,076	1,127	24	605	752	915	1,171	875	473	462	1197

with an average daily mortality for the entire year for the past 10 years of 320, that of June months preceding having been 325. Compared with the preceding month of May, there were death rate has lessened from 17.15 per 1000 population to 16.00. There were 180 fewer deaths symptomatic diseases this month. Diarrheal diseases caused 250 more deaths than in May. From been about 700 fewer than in May, and there were 120 fewer deaths from consumption, show a considerable decrease. Accidental deaths, many of which were from drowning, Compared with June, 1897, there were fewer deaths in all of the sanitary districts, the 400, and by nearly as many as it less than the average of June for the past 10 years. A large There is also a considerable decrease in acute respiratory diseases. Diarrheal diseases deaths, or 50 less than in May, and one-half that of June, 1897. Whooping cough caused 111 is also very much more prevalent than a year ago, 110 deaths being reported from it, which district. Consumption shows the usual June mortality, about 1000 deaths. Smallpox has localities, except Fredonia and Moravia, are believed to be free from the disease, and these it; the cases have been generally very mild, no fatality occurring. The mean temperature 68°; there were 10 clear days and a slight deficiency for the state in rainfall, although this

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and their causes in the following

[Cities are printed in SMALL CAPS, villages in italics and towns in Roman]

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
MARITIME DISTRICT								
Totals.....		7,336	24.75	3,536	52.3	898.00	22	13
CITY OF NEW YORK								
Totals.....	3,438,892	6,558	23.48	3,654	55.1	300.00	26	27
BOROUGH OF MANHATTAN.....	1,917,550	3,609	22.90	1,944	60.0	291.00	22	19
BOROUGH OF THE BRONX.....	137,085	232	26.55	164	50.0	210.00	2	1
BOROUGH OF BROOKLYN.....	1,107,100	2,441	24.00	1,358	58.6	220.50	5	14
BOROUGH OF QUEENS.....	126,042	318	30.00	118	37.0	300.00	2	1
BOROUGH OF RICHMOND.....	64,927	152	27.50	70	46.0	230.00	1	1
Oyster Bay.....	15,000	24	19.00	9	37.5	250.00	1	1
Hempstead.....	24,000	28	19.00	5	37.5	250.00	1	1
North Hempstead.....	8,724	20	25.00	13	65.0	550.00		
Forthold.....	7,671	4	5.00	1	25.0			
Sag Harbor.....	2,600	3	8.00	0				
Huntington.....	8,263	12	17.50	4	33.3	85.00		
Brookhaven.....	13,500	18	12.00	0				
YONKERS.....	40,000	83	23.42	42	50.0	200.00		
Greenburgh.....	12,000	21	21.00	5	24.5	270.00		
MOUNT VERNON.....	15,533	23	17.75	10	45.0	400.00		
Port Chester.....	7,547							
Stuyvesant.....	9,300	13	16.60	6	45.0	150.00		
NEW ROCHELLE.....	8,217	13	18.75	6	60.0	300.00		
Peekskill.....	9,676	16	22.25	5	29.5	220.00		
White Plains.....	4,042	11	25.00	4	36.5	90.00		
Rest of district.....		199	24.00	70	35.0	300.00		
HUDSON VALLEY DISTRICT								
Totals.....		939	16.25	278	29.5	27.50	7	16
ALBANY.....	100,000	167	20.00	60	36.0	215.50	1	3
CORONA.....	24,000	31	15.50	12	40.0	390.00	1	1
TROY.....	65,000	134	23.20	50	40.0	225.00		
WATERVLIET.....	13,000	27	24.00	13	48.5	400.00		
Green Island.....	4,400	9	21.00	6	75.0	500.00		
Lansingburgh.....	10,550	16	18.00	4	26.0	185.00		
Hosack Falls.....	7,014	3		1				
RENSSELAER.....	7,462	9	13.00	5	56.5	265.50		2
Coxsackie.....	3,821	9	24.00	1	11.0	220.00		1
Catskill.....	5,000	10	24.00	1	10.0	110.00		
HUDSON.....	9,633	11	14.50	2	18.2	200.00		
KINGSTON.....	23,560	24	16.00	10	40.0	253.00		
Ellenville.....	3,000	8	20.00	1	12.5	125.00		
Marbletown.....	3,629	4	14.00	1	2.0	240.00		
Rosendale.....	6,125	6	12.00	2	33.0	330.00		
Esopus.....	5,025	4	10.00	0				
Saugerties.....	4,237	7	9.75	2	26.5	142.85		
POCONOKEEPSA.....	23,200	30	15.50	7	13.3	200.00		
Flahki.....	11,725	25	25.00	6	26.0	160.00		
Wappinger Falls.....	3,718	7	24.00	1	14.3	142.85		
NEWBURGH.....	24,535	30	18.00	8	26.5	200.00		
Port Jervis.....	9,327	15	19.00	4			1	
MIDDLETOWN.....	11,612	20	20.00	8	40.0	150.00		
Warwick.....	6,000	8	16.00	2	27.5	220.00		
Goshen.....	4,646	8	20.50	5	62.5	280.00		

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
HUDSON VALLEY DIST.—(Con.)								
Montgomery.....	5,259	7	16.00	2	28.5	.....	.....	.....
Haverstraw.....	7,714	18	24.00	10	55.0	250.00	.....	.....
Nyack.....	5,608	4	10.00	1	25.0	250.00	.....	.....
Ramapo.....	6,600	11	20.00	3	27.8	90.00	.....	.....
Rest of district.....	.....	293	18.00	44	15.0	180.00	2	5
ADIRONDACK AND NORTHERN DISTRICT								
Totals.....	.....	377	18.00	64	16.7	101.35	3	4
WATERTOWN.....	17,000	20	14.10	5	25.0	50.00	.....	.....
Ellisburgh.....	4,223	6	14.00	2	26.0	.....	.....	.....
Cape Vincent.....	3,000	1	.....	0	.....	.....	.....	.....
Clayton.....	4,250	3	9.00	1	33.3	.....	.....	.....
OGDENSBURGH.....	12,000	17	17.00	8	48.0	185.00	.....	.....
Gouverneur.....	6,000	6	12.00	2	33.0	165.00	.....	.....
Potsdam.....	4,000	4	12.00	0	.....	.....	.....	.....
Canton.....	6,013	5	10.00	0	.....	.....	.....	.....
Malone.....	5,000	7	17.00	3	42.8	28.50	.....	.....
Plattsburgh.....	8,480	16	21.00	3	20.0	68.00	1	.....
Glens Falls.....	10,000	20	24.00	5	25.0	150.00	.....	.....
Whitehall.....	4,434	.....	.....	.....	.....	.....	.....	.....
Fort Edward.....	4,382	8	21.50	1	12.5	.....	.....	.....
Kingsbury.....	5,112	7	16.75	3	42.8	430.00	.....	.....
Granville.....	5,281	6	14.00	2	33.0	.....	.....	.....
Salem.....	3,167	.....	.....	.....	.....	.....	.....	.....
Greenwich.....	4,431	7	20.00	0	.....	.....	.....	.....
Rest of district.....	.....	245	12.00	29	18.5	100.00	2	4
MOHAWK VALLEY DISTRICT								
Totals.....	.....	517	17.50	156	30.2	174.10	5	5
SCHENECTADY.....	24,374	32	16.00	17	52.0	160.00	.....	.....
Cobleskill.....	3,436	4	13.00	1	25.0	.....	.....	.....
AMSTERDAM.....	18,542	39	19.20	19	45.0	300.00	.....	.....
Fort Plain.....	3,000	.....	.....	.....	.....	.....	.....	.....
JOHNSTOWN.....	7,768	15	22.50	5	33.3	333.30	.....	2
GLOVERSVILLE.....	14,694	26	2.00	6	23.0	200.00	.....	1
LITTLE FALLS.....	12,000	9	9.00	1	11.0	.....	.....	.....
Herkimer.....	5,150	4	10.00	1	25.0	.....	.....	.....
Ilion.....	4,057	7	21.00	2	28.5	.....	.....	.....
UTICA.....	55,000	102	22.25	46	45.5	340.00	.....	1
Whitestown.....	5,225	6	14.00	1	16.5	.....	.....	.....
ROME.....	18,638	19	15.50	3	18.2	65.00	.....	.....
Boonville.....	3,512	6	20.00	1	16.0	.....	.....	.....
Camden.....	3,675	5	16.50	2	40.0	.....	.....	.....
Waterford.....	5,523	12	24.00	4	33.0	250.00	.....	.....
Mechanicville.....	3,000	4	16.00	2	50.0	.....	.....	.....
Ballston Spa.....	3,527	6	20.00	3	50.0	.....	.....	.....
Saratoga Springs.....	12,000	14	14.00	2	14.2	200.00	2	.....
Rest of district.....	.....	207	12.59	40	20.9	122.00	3	1
SOUTHERN TIER DISTRICT								
Totals.....	.....	375	12.25	56	15.0	110.00	2	7
BINGHAMTON.....	34,514	48	16.00	11	24.5	195.00	.....	2
Owego.....	6,000	12	20.00	3	25.0	83.35	.....	.....
Candor.....	3,595	7	24.00	1	14.2	.....	.....	.....
Waverly.....	4,123	6	18.00	0	.....	.....	.....	.....
ELMIRA.....	30,000	44	17.50	12	27.3	272.20	.....	1

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of —	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST. — (Con.)								
Horseheads.....	3,819	3	11.00	0				
HORNKILLSVILLE.....	12,000	10	10.00	3	30.0	100.00		1
Bath.....	3,261	2	8.00	0				
CORNING.....	10,000	15	18.00	4	27.3	200.00		
Wellsville.....	5,083	3	7.50	0				
OLEAN.....	8,000	6	10.00	1	16.7			
Salamanca.....	3,700	---						
DUNE RK.....	10,000	10	12.00	6	60.0	800.00		
JAMKES TOWN.....	18,627	12		2			1	
Westfield.....	3,000	3	12.00	0				
Fredonia.....	3,400	3	11.50	1	33.0			
Rest of district.....		101	11.50	12	6.5	30.00	1	3
EAST CENTRAL DISTRICT								
Totals.....		489	16.30	120	25.0	150.00	2	3
SYRACUSE.....	120,000	194	19.30	78	41.0	270.00	1	2
Baldwinsville.....	3,040	2	8.00	0				
De Witt.....	5,182	4	10.00	1	25.0			
Cortland.....	8,600	5	7.50	1	20.0	200.00		
Homer.....	3,000	1		0				
Oneida.....	6,083	---						
Hamilton.....	4,110	6	18.00	1	16.7	166.70		
Cazenovia.....	3,208	1						
Brookfield.....	3,235	2		1				
Norwich.....	8,000	6	12.00	0				
Oneota.....	8,000	4	12.00	1	12.5	135.00		1
W. Rochester.....	2,070	---						
Cooperstown.....	3,000	1		0				
Walton.....	4,811	0		2				
Dahl.....	3,000	4	16.00	1	25.0	250.00		
Liberty.....	3,500	7	24.00	6				
Rest of district.....		235	19.00	34	15.0	75.00	1	
WEST CENTRAL DISTRICT								
Totals.....		246	12.00	25	10.5	40.00		1
AUBURN.....	25,000	23	11.50	5	27.0	180.00		
ITHACA.....	13,490	17	15.15	2	17.7	117.50		
Helet.....	4,832	4	10.00	1	25.0			
Watertown.....	4,350	3	8.00	0				
Seneca Falls.....	8,500	3		0				
GENEVA.....	10,000	11	12.20	2	18.2			
Canandaigua.....	6,895	9		0				
Manchester.....	4,781	2	9.00	0				
Phelps.....	5,150	4	10.00	0				
Penn Yan.....	4,254	4	12.00	1	25.0			
Batavia.....	7,221	15	24.00	1	6.8	65.00		
Danville.....	3,755	4	18.00	0				
Le Roy.....	3,030	5	30.00	1	40.0	200.00		1
Warren.....	4,700	4	11.50	0				
Rest of district.....		146	11.50	10	7.5	18.50		
LAKE ONTARIO AND WESTERN DISTRICT								
Totals.....		1,149	18.25	415	36.0	262.00	10	19
BUFFALO.....	360,000	517	16.76	266	49.5	242.50	5	5
TONAWANDA.....	9,000	6	10.00	4	67.0			
Amherst.....	4,000	6	18.00	1	16.7	166.67		1

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT (Continued)								
NORTH TONAWANDA	9,000	11	14.66	5	45.5	192.00	1	...
LOCKPORT.....	16,688	25	17.50	3	12.0	200.00	...	...
NIAGARA FALLS	16,000	28	17.50	12	48.5	450.00	3	...
Medina	4,500	2	0.00	0	0.0	...	...	...
Albion	4,586	7	24.00	3	42.8	143.55	1	...
Brockport.....	3,742	5	18.00	1	16.7	...	...	...
ROCHESTER.....	175,000	203	13.65	58	27.6	250.00	...	...
Palmyra	4,173	3	9.00	0	0.0	131.00	...	...
Newark	3,000	7	24.00	0	0.0	...	...	...
Lyons.....	6,187	10	19.50	3	30.0	...	...	...
Clyde	3,000	5	20.00	0	0.0	200.00	...	...
OSWEGO.....	22,090	29	15.75	5	16.5	...	...	...
Fulton	4,214	9	24.00	0	0.0	...	...	...
Richland	3,637	3	10.00	...	53.3	...	...	...
Rest of district .....	...	275	13.00	64	29.5	145.30	...	...
Totals for the state	11,441	20.00	4,945	48.0	255.83	63	59	
Average for July for past 10 years.....	11,820	21.25	5,870	50.0	332.68	55	100	
Totals for June, 1898.....	8,637	16.00	2,568	30.0	122.50	109	70	

REMARKS.—Following the month of almost the lowest mortality July is always the month the month preceding, and the death-rate has risen from 16.00 to 20.60 per 1000 population deaths occurred than in June, and in deaths credited to other diseases of the digestive June. The relative zymotic mortality is likewise doubled, but in diseases other than diarrheal deaths more than in that month in 1897, which was an unusually healthy July, and the deaths mortality is less even than last year, and the increase has been in deaths from local diseases, 60.0 in this month; in the Maritime district it was 52.3 per cent, and it is increased from last in the metropolis. Diarrheal diseases caused 20.0 per cent of the total mortality, these four districts with largest city populations 40 deaths per 100,000 population for the month, and one in this state that the diarrheal mortality is felt not in the early summer but later, in diarrheal is usually at its lowest in July, the only exception being with the whooping cough, month. Diphtheria caused 159 deaths, or about one-half the normal average for the month, case in the town of Livonia and four or five in the town of Waverly, possibly traceable to of other cases reported. Diseases of the digestive and nervous systems are the only local lightning stroke, but largely from drowning, are increased. The average temperature for the weather occurred, the high range of 100° having been noticed, and the average highest cloudy; the rainfall was deficient.

FOR JULY—(Concluded)

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPS, villages in *italics* and towns in *Roman*

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of —	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
MARITIME DISTRICT								
Totals	7,012	23.30	3,556	60.5	271.00	2.9	94	
CITY OF NEW YORK								
Totals	9,438,899	6,471	32.10	1,414	51.4	369.00	29	98
BOROUGH OF MANHATTAN	1,907,550	3,427	24.00	1,685	49.0	250.00	21	58
BOROUGH OF THE BRONX	127,025	57	36.75	16	46.5	245.00	1	3
BOROUGH OF BROOKLYN	1,190,100	2,187	21.50	1,211	54.5	160.00	6	36
BOROUGH OF QUEENS	128,042	112	28.50	164	52.5	300.00	2	1
BOROUGH OF RICHMOND	61,927	128	8.00	8	32.0	205.00	1	1
Oyster Bay	15,000	23	15.20	8	35.0	305.00	1	1
Long Island	24,000	51	15.5	24	50.0	460.00	1	1
North Hempstead	8,726	20	5.00	7	35.0	200.00	1	1
Southold	7,671	9	14.60	4	45.0	220.00	1	1
Sag Harbor	8,000	7	58.00	2	28.5	145.00	1	1
Huntington	8,253	26	25.00	15	75.0	550.00	1	1
Brooklyn	13,200	22	30.00	8	36.5	185.00	1	1
YONKERS	41,000	74	21.00	45	60.0	300.00	1	1
Greenburgh	12,000	10	20.00	0	55.5	334.00	1	1
MOUNT VERNON	15,513	28	19.00	14	50.0	500.00	1	1
Port Chester	7,547	22	27.50	12	55.0	500.00	1	1
Sung Song	9,500	13	16.35	5	40.0	200.00	1	1
NEW ROCHELLE	8,217	22	30.00	13	60.0	450.00	1	1
Peekskill	9,676	22	27.50	8	36.5	275.00	1	1
White Plains	4,042	15	15.00	9	60.0	330.00	1	1
Rest of district	193	23.75	62	30.0	230.00	1	1	
HUDSON VALLEY DISTRICT								
Totals	1,000	19.45	290	28.2	270.00	5	37	
ALBANY	100,000	167	18.85	35	22.5	275.00	1	30
CORONA	34,000	27	3.50	10	35.0	350.00	1	1
TROT	65,000	114	21.00	36	30.0	320.00	1	7
WATERVLIET	13,000	20	19.00	9	45.0	250.00	1	1
Green Island	4,500	10	25.00	7	65.0	650.00	1	2
Lansingburgh	10,550	16	18.25	6	42.5	425.00	1	1
Hudson Falls	7,014	7	12.50	12	28.5	285.00	1	1
ROSENDALE	7,402	11	17.50	7	63.5	363.00	1	1
Coxsackie	3,124	7	23.00	4	58.5	285.00	1	1
Catskill	5,000	7	17.00	1	14.2	570.00	1	1
Hudson	9,683	17	20.00	8	18.0	1	1	1
KINGSTON	25,500	33	15.60	9	26.5	350.00	1	1
Ellenville	3,000	4	18.60	2	50.0	500.00	1	1
Marinetown	3,660	1	1	0	1	1	1	1
Rosendale	6,125	10	20.00	3	30.0	300.00	1	1
Esopus	5,085	2	2	0	0	0	1	1
Saugerties	4,237	6	17.75	2	33.0	166.70	1	1
POUGHKEEPSIE	23,200	44	23.60	16	37.5	240.00	1	1
Shkill	11,726	27	27.00	10	37.0	450.00	1	1
Wappinger Falls	8,718	3	10.00	1	33.0	1	1	1
NEWBURGH	24,536	48	20.00	15	35.0	225.00	1	1
Port Jervis	9,827	13	16.50	3	21.0	165.00	1	1
WINDLETON	11,612	22	23.00	10	45.5	315.00	1	1
Warwick	6,000	8	16.00	1	12.5	250.00	1	1
Coates	4,616	8	21.00	0	0	0	1	1

YORK STATE BOARD OF HEALTH

districts, cities, villages and towns during August, 1898

type. For boundaries of Sanitary districts see Annual summary]

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MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Ch cerebro-spinal meningitis	Typhoid fever
HUDSON VALLEY DIST.—(Con.)								
Montgomery	5,359	7	13.00	2	28.5	335.00		
Haverstraw	7,714							
Nyack	5,603	9	15.90	3	33.0	330.00		
Ramapo	5,600	8	14.00	3	37.5	500.00		
Rest of district		419	18.00	100	24.0	230.00		
Totals								
ADIRONDACK AND NORTHERN DISTRICT								
Totals		470	15.20	121	25.7	235.00		
WATERTOWN	17,000	15	12.00	2	13.3	65.00		
Ellisburgh	4,333	3	10.00	1	33.0			
Cape Vincent	3,000	4	13.00	0				
Clayton	4,350	3	6.00	1	50.0	500.00		1
Oadesburgh	12,000	31	30.00	19	60.0	350.00		
Gouverneur	5,000	12	24.00	2	25.0	250.00		
Potsdam	4,000	6	15.00	3	50.0	167.00		
Canton	6,013	6	12.00	1	16.7	167.00		
Malone	5,000	11	22.00	7	75.5	545.00		
Plattsburgh	8,480	13	15.32	6	45.0	620.00		
Glens Falls	10,000	21	21.00	6	28.6	300.00		
Whitehall	4,434	4	13.00	2	50.0	500.00		
Fort Edward	4,333	11	25.00	4	36.4	275.00		
Kingsbury	5,112	7	13.00	2	28.6	285.00		
Granville	5,281	5	12.00	3	60.0	600.00		
Salem	2,157							
Greenwich	4,431	3	6.00	1	33.0			
Rest of district		317	14.00	57	18.0	150.00		
Totals		545	18.70	175	32.0	267.40	1	1
MOHAWK VALLEY DISTRICT								
Totals								
SCHENECTADY	24,374	23	22.50	13	56.0	400.00		
Cobleskill	3,436	6	9.00	2	33.0	166.70		
AMSTERDAM	13,542	24	22.00	17	70.0	535.00		
Fort Plain	2,000							
JOHNSTOWN	7,763	10	12.40	3	30.0	100.00		
GLOVERSVILLE	14,534	23	19.75	9	40.0	300.00		1
LITTLE FALLS	12,000	12	12.00	6	50.0	420.00		
Herkimer	5,150	7	13.60	1	14.3			
Alton	4,057	8	22.00	3	37.5	135.00		
UTICA	55,000	106	22.50	46	43.0	435.00	1	3
Whitestown	5,225	9	21.00	2	22.2	220.00		
Rome	13,688	25	22.00	7	28.0	280.00		
Boonville	3,512	8	22.00	3	37.5			
Camden	3,075	6	19.75	0		200.00		1
Watertown	5,323	7	13.20	2	28.6	425.00		1
Mechanicville	3,000	5	20.00	0		300.00		
Ballston Spa	3,527	3	10.00	0				
Saratoga Springs	12,000	24	24.00	10	42.0	285.00		1
Rest of district		238	14.00	57	24.0	175.00		1
Totals		477	14.35	108	21.2	300.00		6
SOUTHERN TIER DISTRICT								
Totals								
BINGHAMTON	24,514	44	18.30	13	29.2	330.50		1
Owego	5,000	6	12.00	3	50.0	500.00		
Candor	2,525	2	10.00	0				
Waverly	4,123	11	26.00	1				
ELMIRA	30,000	41	13.60	16	38.0	275.00		1

MONTHLY BULLETIN

SANITARY DISTRICTS.	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST.—(Con.)								
Horseheads.....	3,819	2	8.00	1	50.0	500.50		
HORNELLSVILLE.....	12,000	17	17.00	7	40.0	170.00		
Bath.....	3,261	7	24.00	1	14.2	285.00		
CORNING.....	10,045	20	24.00	8	40.0	450.00		
Weilsville.....	5,083	7	17.00	0		128.00		
OLPAN.....	8,000	4	6.00	2	50.0			
Salamanca.....	3,700							
DUNKIRK.....	10,000	17	20.00	5	30.0	300.00		
JAMESTOWN.....	18,627	28	18.00	9	32.0	128.50		
Westfield.....	3,000	3	12.00	1	33.0			
Fredonia.....	3,400	1		0				
Rest of district.....		267	18.00	37	12.5	154.00		4
EAST CENTRAL DISTRICT								
Totals.....		482	16.00	116	27.0	210.00	1	9
SYRACUSE	120,000	111	11.10	45	40.5	333.30		5
Baldwinsville.....	3,040	1		0				
De Witt.....	5,182	7	16.50	4	57.0	710.00		1
Cortland.....	8,000	10	14.00	3	30.0	200.00		
Homer.....	3,000	5	20.00	1	20.0	200.00		
Oneida.....	6,083	8	16.00	2	25.0			
Hamilton.....	4,110	4		2				1
Cazenovia.....	3,803	4		0				
Brookfield.....	3,235	5	18.50	2	40.0	400.00		
Norwich.....	6,000	6	12.00	1	16.7	165.00		
Oneonta.....	8,000	9	14.00	3	33.3	110.00		
Worcester.....	2,670	2	12.00	0				
Cooperstown.....	3,000	3	12.00	1	33.3			
Walton.....	4,811	1		0				
Delhi.....	3,000	3	12.00	0				
Liberty.....	3,500	10	28.00	3	30.0	200.00		1
Rest of district.....		243	13.25	49	20.0	143.50	1	1
WEST CENTRAL DISTRICT								
Totals.....		328	13.25	65	20.0	157.00		1
AUBURN	25,000	33	16.00	14	32.5	365.00		
ITHACA.....	13,460	20	17.75	5	25.0	300.00		
Hector.....	4,832	3	9.00	1	33.3			
Waterloo.....	4,350	9	24.00	5	55.0	445.00		
Seneca Falls.....	6,500	8	15.00	1	12.5			
GENEVA.....	10,000	11	13.20	2	18.2	182.00		
Canandaigua.....	5,868							
Manchester.....	4,181	4	12.00	1	25.0	200.00		
Phelps.....	5,150	6	14.00	1	16.7	165.00		
Penn Yan.....	4,254	3	10.00	1	33.0			
Batavia.....	7,221	13	21.50	5	38.0	165.00		
Dansville.....	3,758	5		1	20.0			
Le Roy.....	3,000	11	25.00	4	36.5	365.00		
Warsaw.....	4,700	4	11.50	2	50.0	250.00		
Rest of district.....		198	18.00	22	10.5	90.00		1

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT Totals		977	15.75	376	40.0	315.00	4	12
BUFFALO	360,000	438	14.20	211	48.2	392.50	.....	9
TONAWANDA	9,000	15	20.00	4	26.7	300.00	.....	.....
Amherst	4,000	5	15.00	1	20.9	400.00	.....	.....
NORTH TONAWANDA	9,000	8	11.00	4	50.0	375.00	.....	1
LOCKPORT	16,088	1	.....	0	.....	.....	.....	.....
NIAGARA FALLS	16,000	21	15.85	11	50.0	400.00	.....	1
Medina	4,500	5	18.00	1	20.0	.....	.....	.....
Albion	4,536	9	24.00	8	88.9	330.00	.....	.....
Brackport	3,742	8	24.00	2	25.0	350.00	.....	.....
ROCHESTER	175,000	160	11.00	57	35.5	300.00	1	2
Palmyra	4,174	4	12.00	1	25.0	.....	.....	.....
Newark	3,000	5	24.00	1	16.7	167.00	.....	.....
Lyon	6,127	4	10.00	2	50.0	.....	.....	.....
Clyde	3,000	5	20.00	3	60.0	600.00	.....	.....
Oswego	22,000	30	18.50	8	27.5	400.00	1	.....
Fulton	4,314	.....	.....	.....	.....	.....	.....	.....
Rochland	3,637	2	.....	0	.....	.....	.....	.....
Rest of district .....	.....	256	12.50	67	24.0	240.00	2	5
Totals for the state	11,303	20,00	4.811	42.5	255.00	40	182	
Average for August for past 10 years	10,870	19.40	4.556	44.0	235.85	43	171	
Totals for July, 1898	11,441	30.80	4.946	43.0	255.65	68	200	

REMARKS.—For the month of August, compared with the preceding month, the annual death rate the average death-rate for August of the past 10 years, which has been 19.30, as well as that of 44.5 per cent of the deaths occurring under the age of five years. Zymotic diseases caused the prevalence and distribution of typhoid fever and malarial diseases, decrease in diphtheria, measles and whooping cough. Compared with August, 1897, typhoid fever, diarrheal diseases and Western districts have a lower death-rate than in July, the East Central shows no change, diseases, diphtheria and scarlet fever decreased, and typhoid fever is doubled, causing 100 mortality of July, against a decrease of 300 in the metropolis; this increase in the rural district for the past 10 years, being about 20.0 per cent of all deaths, all other zymotic diseases rose for the month of 300—the smallest mortality for one month in the past 10 years. Scarlet has increased in all the districts; the increase is excessive in the Maritime district. Whooping epidemic of mild small pox previously reported in the western part of this state has recognized it. There were not less than 16 deaths during the month from lightning stroke, a little above the normal; the highest recorded 22°, the lowest 40°; the rainfall was 6 uniformly prevailed.

FOR AUGUST—(Concluded)

Material diseases	Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough	Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
2	12				2	12	257	47	77	10	73	68	70	110	44	50	50	80
1					4	6	152	23	20	5	19	20	30	54	17	14	13	32
...							...	...	1	...	...	...	1	1	1	...	...	4
...							...	...	1	...	...	...	1	1	1	...	...	1
...							...	...	1	...	...	...	1	1	1	...	...	...
...							...	...	1	...	...	...	3	2	2	...	...	2
...							...	...	2	...	...	1	1	1	1	2	...	...
...							...	...	1	...	...	...	1	1	1	...	...	...
...		1			1	1	30	2	20	2	13	10	7	15	6	14	6	14
...							1	...	...	...	2	...	...	1	...	1	...	...
...							...	2	...	...	...	...	1	...	...	...	1	...
...						1	2	...	...	...	...	...	...	...	3	1	3	...
...							10	2	2	...	1	...	4	...	...	...	...	...
...						
...						
...	1				3	3	44	11	15	2	25	15	21	80	12	16	25	28
49	36	56	15	188	124	2,345	813	1,019	67	1,288	651	749	1,062	390	709	437	1,949	
62	4	57	60	80	190	2,920	624	1,065	84	915	516	647	1,061	247	648	442	1,305	
24	50	52	18	176	150	2,298	710	1,116	67	1,244	646	793	1,118	380	702	388	1,372	

rate from all causes per 1000 population has fallen from 30.80 to 20.00, and somewhat exceeds August, 1897, which was 18.75. The infant mortality is but little reduced from that of July the same month, as in July 21.5 per cent of deaths from all causes. There was increase in scarlet fever, measles and cerebro-spinal meningitis, and no change in that of diarrheal diseases. Whooping cough are more prevalent, and diphtheria less so. The Maritime and the Lake Ontario and the rest of the districts have increased death rates. In the Maritime districts diarrheal deaths. Diarrheal diseases in all the other districts increased largely causing double the deaths late in the summer is customary; for the state the mortality is the average for the causing 5 per cent. Diphtheria caused 120 deaths against 152 in July and against an average for a mortality of 26, of which 18 were in the metropolis. Typhoid fever as usual, caused 170 deaths. August being uniformly the month of its largest mortality. The appeared in the towns of Mt. Morris, Canadensis and Alden, its spread being due to failure to occurring in rural localities. The average mean temperature for the month was 70°, which is inches, an excess of 1½ inches, there were comparatively few clear days, southwest winds

MONTHLY BULLETIN OF THE NEW

Abstracts of reports of deaths and causes in the following(Cities are printed in SMALL CAPS, villages in *italics*, and towns in Roman

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of--	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
MARITIME DISTRICT								
Totals	8,488,890	5,851	23.10	2,990	13.5	215.00	27	187
CITY OF NEW YORK								
Totals	8,488,890	5,851	23.10	2,990	13.5	215.00	27	187
BOROUGH OF MANHATTAN	1,011,765	3,470	31.60	1,540	44.8	300.00	14	94
BOROUGH OF THE BRONX	187,085	343	30.00	121	32.5	200.00	3	2
BOROUGH OF BROOKLYN	1,187,000	2,136	21.75	964	46.0	225.00	9	56
BOROUGH OF QUEENS	128,042	261	24.50	117	45.0	224.00	1	3
BOROUGH OF RICHMOND	64,927	196	25.00	40	36.0	200.00		8
Oyster Bay	5,000	21	17.00	7	33.3	140.00		
Heipstead	24,000	42	3.00	11	26.0	340.00		7
North Hempstead	8,726	24	30.00	10	41.0	285.00		1
Southold	7,071	12	18.00	5	41.0	250.00		
Sa Harbor	8,000	4	10.00	0		20.00		
Huntington	8,253	6		0				
Brickhaven	18,500	30	17.75	7	35.0	350.00	1	
Yonkers	40,000	73	21.00	31	42.5	274.00		3
Greenburgh	12,000	23	18.00	6	33.3	275.00		1
Mount Vernon	15,513	30	23.20	13	43.0	300.00		
Port Chester	7,547	2		1				
Sing Sing	9,500	16	20.50	3	12.5	62.50		
N. W. CHELSE	8,347	27		14			1	
Peekskill	9,676	11	15.00	3	9.5	965.00		1
White Plains	4,042	10	30.00	3	30.0	300.00		
Rest of district		174	19.50	66	40.0	300.00	2	1
HUDSON VALLEY DISTRICT								
Totals	1,048	1,048	19.35	289	27.5	235.00	2	38
ALBANY	100,000	138	19.00	41	36.0	218.00		12
COHUES	24,000	40	20.10	8	20.0	175.00		1
TROY	65,000	113	20.80	27	24.5	250.00		11
WATERVLIET	18,000	19	17.53	3	15.0	150.00		
Green Island	4,500	12	26.35	8	65.0	335.00		
Laurensburgh	10,550	21	23.75	5	25.0	100.00		3
Hoonick Falls	7,014	13	22.25	1	7.5	150.00		
RENSSELAER	7,463	14	24.00	5	35.7	357.00		2
COXSACKIE	3,824	7	22.50	2	28.5	42.00		1
Catskill	5,000	7	16.00	2	38.5	142.85		
HUDSON	9,633	4		0		250.00		1
KINGSTON	25,500	40	18.50	9	22.5	100.00		
Ellenville	3,000	8	30.00	5	62.5	750.00		2
Marbletown	3,689	3	8.00	1	50.0	600.00		
Rosendale	5,125	10	20.00	2	20.0	200.00		1
Esopus	5,085	6	15.00	3	50.0	315.00		
Saugerties	4,237	6	17.00	0		165.00		
POLLOCKKESPIE	23,900	23	17.00	6	18.0	10.00		
Fishkill	11,736	20	21.60	5	25.0	200.00		
Wappinger Falls	3,718	4	15.00	0		50.00	1	
NEWBURGH	24,536	30	19.00	11	36.0	280.00		1
Port Jervis	9,387	8	12.00	3	37.5	375.00	1	1
MIDDLETOWN	11,812	22	23.00	8	36.5	400.00		
Warwick	5,000	19	30.00	9	48.0	240.00		
Gamben	4,646	5	18.80	4	80.0	800.00		

MONTHLY BULLETIN

SANITARY CONDITION	Population	Total number of deaths	Representing annual death rate per 1,000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1,000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
HUDSON VALLEY DIST —(Con.)								
Montgomery	5,250	10	32.75	2	30.0	300.00	.....	.....
Haverstraw	7,714	13	10.00	3	.....	.....	.....	.....
Nyack	5,898	6	18.00	0	.....	165.00	.....	.....
Bamapo	6,000	12	20.50	5	45.0	300.00	.....	1
Rest of district .....	.....	377	15.50	114	30.0	250.00	.....	2
ADIRONDACK AND NORTHERN DISTRICT								
Totals .....	.....	544	17.00	130	24.0	220.00	2	14
Watertown	17,000	36	25.00	14	40.0	330.00	.....	4
Ellisburgh	4,223	7	30.00	1	14.2	142.85	.....	.....
Cape Vincent	3,000	2	8.00	1	50.0	500.00	.....	.....
Clayton	4,250	9	24.00	1	11.0	.....	.....	.....
Ogdensburg	12,000	24	34.00	14	58.0	250.00	.....	.....
Gouverneur	6,000	3	8.00	1	33.3	300.00	.....	.....
Potdam	4,000	3	9.00	0	.....	.....	.....	.....
Canton	6,013	12	24.00	5	41.6	165.00	.....	.....
Malone	6,000	12	15.00	3	42.5	425.00	.....	.....
Plattsburgh	6,450	15	21.60	3	30.0	200.00	.....	.....
Glens Falls	10,000	28	38.00	3	12.0	115.00	.....	2
Whitehall	4,434	8	22.50	1	12.5	125.00	.....	.....
Fort Edward	4,382	9	24.00	2	22.2	111.00	.....	.....
Kingsbury	5,112	10	24.00	4	40.0	200.00	.....	.....
Granville	5,281	9	20.40	3	22.0	22.00	.....	.....
Salem	2,167	.....	.....	.....	.....	.....	.....	.....
Greenwich	4,431	10	25.00	4	40.0	300.00	.....	.....
Rest of district .....	.....	349	15.25	71	20.0	210.00	.....	9
MOHAWK VALLEY DISTRICT								
Totals .....	.....	575	18.50	163	28.4	260.00	3	21
Schenectady	24,374	38	18.50	6	15.7	210.00	.....	.....
Cobleskill	3,436	8	11.50	0	.....	.....	.....	.....
Amsterdam	13,542	24	22.00	14	41.0	250.00	.....	5
Fort Plain	3,000	9	30.00	3	33.0	222.00	.....	2
Johnstown	7,768	7	11.00	2	28.5	285.00	.....	.....
Gloversville	14,694	14	12.60	4	28.5	142.50	.....	2
Little Falls	12,000	9	9.00	2	22.0	.....	.....	.....
Herkimer	5,150	11	25.00	3	27.5	274.50	.....	.....
Ilion	4,067	5	18.00	1	20.0	200.00	.....	.....
Utica	15,000	60	10.35	22	25.0	250.00	.....	.....
Whitestown	5,425	11	24.00	2	18.0	95.00	.....	.....
Rome	13,438	25	22.00	7	28.0	280.00	.....	2
Boonville	3,312	5	17.00	1	20.0	.....	.....	.....
Camden	3,675	9	30.00	1	10.0	110.00	.....	.....
Waterford	5,522	15	32.00	4	20.0	400.00	.....	.....
Mechanicville	3,000	11	.....	5	45.0	645.00	.....	.....
Ballston Spa	3,227	6	17.00	0	.....	.....	.....	.....
Saratoga Springs	12,000	24	24.00	4	16.7	200.00	.....	.....
Rest of district .....	.....	251	15.00	83	32.5	300.00	3	7
SOUTHERN TIER DISTRICT								
Totals .....	.....	608	15.10	144	.....	300.00	4	16
Binghamton	34,514	58	20.25	24	41.5	400.00	.....	2
Oneida	6,000	6	12.00	2	50.0	500.00	.....	1
Candor	3,525	3	8.00	1	60.0	500.00
Waverly	4,152	9	24.00	1	11.0	350.00
Elmira	30,000	48	19.20	16	33.0	190.00	1	2

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MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST.—(Con.)								
Horseheads.....	3,319	2	6.0	1	50.0	500.00		1
Hornellsville.....	12,001	16	16.00	3	18.7	375.00		1
Bath.....	3,481	4	16.00	0				
Corning.....	10,045	16	19.00	5	31.2	375.00		2
Wellsville.....	5,483	3	5.0	0				
Orlean.....	5,000	3	10.00	2	66.7			
Salamaneca.....	3,700	5	16.2	3	60.0	600.00		
Dunkirk.....	10,000	12	14.40	4	33.3	600.00		1
Jamestown.....	18,677	27	17.35	12	68.0	800.00		2
Westfield.....	3,000	1	3.3	1	100.0			
Fredonia.....	3,400	6	21.15	0		380.00		
Rest of district.....		284	14.5	68	23.6	275.00	3	6
EAST CENTRAL DISTRICT								
Totals.....		545	18.75	148	26.2	256.18	1	20
SYRACUSE.....	120,000	165	16.50	44	26.5	235.00		9
Baldwinsville.....	3,140	8	25.00	1	12.5	375.00		
De Witt.....	6,182	2	3.2	0				
Cortland.....	8,800	16	22.50	9	56.3	300.00	1	1
Homer.....	3,000	2	12.0	0				
Oneida.....	6,664	12	21.60	5	34.5	560.00		
Hamilton.....	4,110	6	18.00	2	33.3	167.0		
Cazenovia.....	3,808	7	23.50	0				
Brookfield.....	3,855	1	2.6	0				
Aurich.....	6,000	12	24.00	6	50.0	250.00		
Oneonta.....	3,000	6	9.00	4	66.6	33.30		
Worcester.....	2,700	2	10.00	0				
Cooperstown.....	3,000	4	16.00	0				
Walton.....	4,811	10	25.00	5	50.0	500.00		
Dehl.....	3,000	3	12.0	0				
Liberty.....	2,500	11	24.00	2	18.2	275.00		
Rest of district.....		276	15.00	65	23.5	260.00		10
WEST CENTRAL DISTRICT								
Totals.....		404	16.00	96	26.5	260.00	1	8
ADIRONDACK.....	25,000	46	22.00	22	48.0	225.00		
ITHACA.....	13,400	29	5.00	7	26.0	410.00		
Hector.....	4,532	4	10.00	0				
Watertown.....	4,350	3	9.00	0				
Seneca Falls.....	6,500	5	10.00	0		200.00		
GENEVA.....	10,000	26	30.00	9	35.0	225.00		
Canondagua.....	6,868	1	1.4	0				
Manchester.....	4,181	7	20.50	0				
Phelps.....	5,180	8	19.20	3	37.5	375.00		1
Penn Yan.....	4,264	6	23.00	3	50.0	250.00		1
Batavia.....	7,281	11	18.20	3	26.5	90.00		1
Danville.....	3,758	6	16.00	0				
Le Roy.....	3,000	12	30.00	5	42.0	490.00		2
Warsaw.....	4,700	5	13.50	2	40.0	200.00		
Rest of district.....		233	23.00	52	22.5	250.00	1	8
LAKE ONTARIO AND WESTERN DISTRICT								
Totals.....		1,011	16.10	350	34.5	257.50	3	23
BUFFALO.....	260,000	896	18.30	176	44.3	275.00	2	10
TONAWANDA.....	9,000	6	6.6	3	40.0			1
Amherst.....	4,000	1	2.5	1	100.0			

FOR SEPTEMBER—(Continued)

Malarial diseases	Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough	Croup and diphtheria	Diarrheal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrheal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
1					1	2	64	7	9	1	23	16	80	40	12	14	33	90
2					3	7	110	13	42	4	48	80	55	53	25	8	45	47
					6		23	5	16	1	18	9	15	19	10	12	10	17
							3				1							
							3				4							4
							7				2	1	1	1				
							1		2		1	1	1	1	1	2	1	
											1		2	1				1
							2				1	1	1	1	1			3
							2				1		1					3
											1	1						
							5				1	1						2
2					2	1	91	12	4	3	1	10	32	32	10	1	25	17
1	1				2		90	14	34	3	40	28	23	50	16	14	87	34
					2		12	1	7		6	2		5	1		8	10
							10				8	4	2	2	1	1	9	
									1				1	2				
							1				1		1	1				
							6				1	1	1	2	1	1	2	4
											1	3	1	1				
							3	1			1		1	1		1	1	2
							1		1		1		1	1	1	1	3	1
							1		1		1		1	1	1	1	1	1
							3		1		1		1			1	1	1
1							64	8	20	2	23	12	24	34	8	9	22	12
3	1	1	1	1	15	8	197	48	76	9	77	63	97	119	41	69	68	100
1				1	8	4	82	22	30	5	20	17	35	52	16	30	17	44
											2					2		1

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT (Continued)								
NORTH TONAWANDA	9,000	8	19.00	5	75.0	350.00	..	1
LOOSEPORT	16,088	15	12.00	2	12.8	300.00	..	6
NIAGARA FALLS	16,000	88	34.00	11	30.0	480.00	..	..
Medina	4,500	1	..	0	..	..	..	1
Albion	4,536	6	15.00	2	33.0	380.00	..	..
Brookport	3,742	5	..	2	..	..	..	..
ROCHESTER	175,000	187	13.85	45	34.5	190.00	..	4
Palmyra	4,173	5	15.00	1	20.0	..	..	..
Newark	8,000	9	30.00	2	22.2	220.00	..	..
Lyons	6,127	11	21.45	3	27.3	545.00	..	4
Clyde	3,000	1	..	0	..	..	..	..
Oswego	22,000	32	17.50	15	41.0	300.00	..	1
Fulton	4,244	10	25.00	3	30.0	300.00	..	..
Richland	3,667	3	..	1	..	..	..	..
Rest of district .....	..	284	15.00	80	37.5	346.00	1	5
Totals for the state	11,481	..	30.75	4,890	37.5	230.00	47	239
Average for May for past 10 years	9,310	..	18.00	3,672	40.0	255.00	40	205
Totals for Sept., 1898	11,809	..	20.00	4,811	49.5	255.00	40	161

REMARKS.—The total reported mortality for the month is 11,481, which is an increase of 180 deaths is less instead of greater. The increase is in diseases of the respiratory, circulatory cases, diarrheal diseases having decreased by about 500 deaths. In the Maritime and Hudson reported increase. Compared with September, 1897, there is an increase in the total mortal-zymotic diseases, in typhoid fever, malarial diseases, whooping cough and diarrhea, and leucæ and from unclassified diseases. The increase is also about 2000 above the average for this much above the average for the month. Zymotic diseases caused 23.0 per cent of the total nearly 500 fewer deaths than in August, but 600 more than the average for the month; this customary increase in diarrheal mortality in the early fall in the country, in contrast with its has a larger general prevalence than usual, 383 deaths, being double that of last September, diseases have a large increase in the Maritime district. Scarlet fever and measles have little form previously reported, has been detected at Dunkirk, Genesee, Conesus, Elmira, McLean because of its mildness in this and adjoining states, which report a similar prevalence to our suppressing it. The average temperature for the month was 2.5° above the average; the 15 clear days on an average for the month and but 6 cloudy, the rainfall was 3 inches or nearly from malaria and 17 from dysentery) are not included in this report.

Malarial diseases		Smallpox	Scarlet fever	Measles	Erysipelas	Whooping cough	Croup and diphtheria	Diarrhoeal diseases	Acute respiratory diseases	Consumption	Puerperal diseases	Diseases of digestive system (not diarrhoeal)	Diseases of urinary system	Diseases of circulatory system	Diseases of nervous system	Cancer	Accidents and violence	Old age	Unclassified
88	70	20	20	6	190	185	1,672	764	1,076	79	1,162	647	856	1,116	373	927	478	1,563	
70	6	53	26	19	97	826	1,320	724	366	62	635	520	637	948	205	456	492	1,260	
49	20	26	26	16	168	124	2,845	613	1,019	67	1,268	651	749	1,062	390	709	430	1,849	

over that of August, the daily average being 582 against 365, customarily the number of and nervous systems, and in deaths from violence, also in typhoid fever and malarial dysentery districts there were fewer deaths than in August. In all the other districts there is a fall by 3000 cases, the increase being in all the sanitary districts, and showing itself, among among local diseases in those of the digestive and nervous systems, also in deaths from a month for the past 10 years. The infant mortality is 50 less than in August, but a very mortality, against 253 in August and 190 in last September. Diarrheal diseases caused increase in all the sanitary districts but chiefly in those having large rural populations, the incidence in the early summer in the cities being more marked than usual. Typhoid fever and the increase is in all parts of the state, there being now a special epidemic. Malarial prevalence, and dysentery continues to cause but few deaths. Smallpox in the very mild and much as since last month, the origin has apparently been from cases unrecognized own; an inspector from this Board has been detained for he exclusive duty of flooding and relative humidity was 75%, southwesterly winds prevailing of moderate velocity, there were normal. Ninety-six deaths returned from Montauk point hospital (46 from typhoid fever, 32

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

(Cities are printed in SMALL CAPS, villages in italics and towns in Roman)

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
MARITIME DISTRICT								
Totals.....		5,484	18.85	1,041	36.2	191.00	23	117
CITY OF NEW YORK								
Totals.....	3,488,899	5,096	18.00	1,877	36.8	118.25	21	109
BOROUGH OF MANHATTAN.....	1,911,755	2,852	16.00	1,051	36.9	118.61	12	56
BOROUGH OF THE BRONX.....	187,675	308	17.00	88	20.0	110.00	...	3
BOROUGH OF BROOKLYN.....	1,197,100	1,656	16.25	596	37.8	114.00	5	45
BOROUGH OF QUEENS.....	128,043	170	16.00	72	42.8	147.00	1	4
BOROUGH OF RICHMOND.....	64,927	111	20.50	40	36.4	110.00	...	1
Oyster Bay.....	15,000	19	...	6	...	...	...	...
Hempstead.....	24,000	19	...	19	...	...	...	1
North Hempstead.....	8,726	8	...	1	...	...	...	...
Southold.....	7,671	9	14	2	33.3	110.00	...	...
Sag Harbor.....	3,000	1	...	...	...	...	...	...
Huntington.....	8,268	12	...	2	...	...	...	...
Brookhaven.....	13,500	23	24.00	4	17.8	260.00	...	3
YONKERS.....	40,000	67	20.20	30	45.0	210.00	...	...
Greenburgh.....	12,000	15	15.00	2	13.8	123.00	...	...
MOUNT VERNON.....	15,513	22	17.00	8	36.5	182.00	...	...
Port Chester.....	7,547	...	...	...	...	...	...	...
Sing Sing.....	9,500	8	...	2	...	...	...	...
NEW ROCHELLE.....	8,217	13	19.88	2	23.0	154.00	...	...
Preakill.....	9,676	15	18.80	4	26.5	65.00	...	...
White Plains.....	4,049	10	25.00	5	80.0	400.00	...	...
Rest of district.....		142	15.00	27	17.0	134.00	1	4
HUDSON VALLEY DISTRICT								
Totals.....		937	16.50	217	28.0	155.00	5	40
ALBANY.....	100,409	156	18.70	26	23.0	110.00	1	5
CORHES.....	24,000	36	18.00	13	30.0	135.00	2	4
TROY.....	65,000	105	19.85	31	31.0	175.00	2	7
WATERVLIET.....	12,000	18	12.00	3	28.0	...	...	...
Green Island.....	4,500	2	...	0	...	...	...	...
Lansingburgh.....	10,560	19	21.75	9	48.0	315.00	...	...
Hosack Falls.....	7,014	7	12.00	2	28.5	25.00	...	1
RENSSELAER.....	7,462	9	14.80	2	23.2	...	...	...
Coxsackie.....	3,324	8	28.00	1	12.5	...	...	...
Catskill.....	3,000	5	12.00	2	40.0	50.00	...	...
Hudson.....	9,633	12	15.00	3	25.0	24.00	...	3
KISSAUGUS.....	25,500	30	13.00	0	33.3	66.00	...	...
Ellenville.....	8,000	4	16.00	0	...	250.00	...	1
Marlborough.....	5,680	5	16.00	0	...	200.00	...	1
Rosendale.....	6,135	11	21.50	2	37.5	182.00	...	...
Esopus.....	5,685	6	14.50	2	33.8	...	...	...
Saugerties.....	4,387	5	9.00	1	33.3	...	...	...
POPOKANSIE.....	28,900	38	10.5	2	21.0	141.50	...	1
Fishkill.....	11,726	14	15.20	2	14.2	71.00	...	...
Wappinger Falls.....	8,718	7	21.00	1	12.8	...	...	...
NEWBORN.....	24,530	34	16.00	6	17.5	175.00	...	3
Port Jervis.....	9,277	17	16.70	2	29.0	75.00	...	...
MILBURY.....	11,612	21	22.40	3	16.0	185.00	...	2
Warwick.....	8,000	8	16.00	2	37.5	240.00	...	...
Goshen.....	4,646	7	19.00	2	29.5	182.50	...	...

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of --	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
HUDSON VALLEY DIST — (Con.)								
Montgomery	5,352	11	24.00	2	17.5	90.00	.....	.....
Haverstraw	7,714	2	.....	0	.....	.....	.....	.....
Nyack	5,808	4	10.00	2	50.0	250.00	.....	.....
Ramapo	5,800	2	.....	0	.....	.....	.....	.....
Rest of district		338	14.00	71	31.0	167.15	.....	12
ADIRONDACK AND NORTHERN DISTRICT								
Totals		486	16.63	119	34.5	181.00	1	26
WATERTOWN	17,000	11	24.00	12	35.0	300.00	1	4
Ellisburgh	4,288	5	14.50	1	30.0	400.00	.....	1
Cape Vincent	3,000	2	8.00	0	.....	.....	.....	.....
Clayton	4,250	6	17.00	0	.....	330.00	.....	2
Ogdensburg	12,000	20	30.00	7	25.0	100.00	.....	.....
Gouverneur	5,000	3	16.00	2	25.0	250.00	.....	1
Fotadani	4,000	7	18.00	3	50.0	183.00	.....	1
Canton	5,012	10	30.00	2	30.0	100.00	.....	1
Malone	5,000	5	12.00	2	40.0	200.00	.....	.....
Plattsburgh	9,480	15	21.66	4	26.0	400.00	.....	3
Glens Falls	10,000	21	25.00	5	22.0	150.00	.....	1
Whitehall	4,434	1	.....	0	.....	.....	.....	.....
Fort Edward	4,382	3	.....	1	.....	.....	.....	.....
Kingsbury	5,112	9	21.00	1	10.5	110.00	.....	.....
Granville	5,581	9	21.00	2	33.0	110.00	.....	.....
Greenwich	4,431	2	.....	0	.....	.....	.....	.....
Lowville	4,000	8	24.00	2	25.0	125.00	.....	.....
Rest of district		315	15.00	73	24.0	162.00	.....	18
MOHAWK VALLEY DISTRICT								
Totals		465	15.65	85	18.0	179.00	2	25
SCENECTADY	24,374	23	12.00	7	33.0	90.00	.....	.....
Cobleskill	3,496	7	24.00	1	14.2	235.00	.....	1
AMSTERDAM	18,543	33	21.30	5	15.1	450.00	.....	12
Fort Plain	3,000	8	12.00	1	33.0	.....	.....	.....
JOHNSTOWN	7,706	10	15.40	1	10.0	240.00	.....	2
GLOVERSVILLE	14,094	16	13.06	3	19.0	65.00	.....	.....
LITTLE FALLS	12,000	6	.....	2	.....	.....	.....	.....
Herkimer	5,110	7	16.75	1	14.2	.....	.....	.....
Ilion	4,057	4	12.00	1	25.0	.....	.....	.....
UTICA	55,000	33	19.10	24	29.0	130.00	.....	.....
Whitestown	5,285	5	.....	1	.....	.....	.....	.....
ROME	12,638	21	18.50	3	14.0	140.00	.....	2
Boonville	3,512	5	17.00	1	20.0	400.00	.....	1
Camden	3,075	11	19.50	3	60.0	663.00	.....	.....
Waterford	5,622	6	13.00	1	16.7	.....	.....	.....
Mechanicville	3,000	6	24.00	1	16.7	330.00	.....	.....
Ballston Spa	3,527	.....	.....	.....	.....	.....	.....	.....
Saratoga Springs	12,000	20	30.00	3	15.0	250.00	.....	2
Rest of district		306	12.00	26	12.5	.....	2	5
SOUTHERN TIER DISTRICT								
Totals		487	15.00	68	14.0	162.00	2	17
BINGHAMTON	24,514	24	12.00	2	27.5	118.00	.....	1
Owego	5,000	12	.....	0	.....	210.00	.....	1
Candor	3,535	3	12.00	0	.....	.....	.....	.....
Waverly	4,123	6	18.00	1	16.7	.....	.....	.....
ELMIRA	20,000	37	14.50	5	13.5	164.00	.....	3

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of —	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST.—(Con.)								
Horseheads	8,819	2	8.00	0	.....	.....	.....	.....
Hornellsville	12,000	15	15.00	0	.....	380.00	.....	4
Euth	3,261	6	22.80	2	33.3	.....	.....	.....
Corning	10,035	8	10.00	1	12.5	.....	.....	.....
Wellsville	6,023	6	15.00	1	25.0	250.00	.....	1
OLEAN	8,000	12	20.00	3	21.0	220.00	.....	.....
Salamanca	8,700	6	19.25	1	.....	.....	.....	.....
Dunkirk	18,200	16	14.50	4	25.0	82.50	.....	.....
Jamestown	12,637	26	16.65	2	12.0	115.00	.....	.....
Westfield	2,000	4	18.00	1	25.0	.....	.....	.....
Fredonia	3,400	4	14.10	1	25.0	.....	.....	.....
Rest of district .....	.....	280	14.50	37	13.0	175.00	2	7
EAST CENTRAL DISTRICT								
Totals .....	.....	476	16.25	80	17.0	143.00	.....	23
STRACUSE	120,000	128	12.50	22	16.5	180.00	.....	8
Baldwinsville	8,040	5	20.00	1	20.0	200.00	.....	.....
De Witt	5,122	8	19.00	2	25.0	125.00	.....	1
Corland	8,600	8	12.00	3	37.5	250.00	.....	.....
Homer	3,000	4	16.00	1	25.0	250.00	.....	1
Oneida	6,083	12	24.00	3	25.0	250.00	.....	1
Hamilton	4,110	5	15.00	0	.....	.....	.....	.....
Cazenovia	2,908	2	8.00	1	50.0	.....	.....	.....
Brookfield	3,235	2	8.00	1	50.0	.....	.....	.....
Norwich	6,000	11	22.00	3	27.0	50.00	.....	.....
Oneonta	8,000	6	12.00	2	25.0	125.00	.....	1
Worcester	2,670	2	10.00	0	.....	.....	.....	.....
Cooperstown	8,000	5	20.00	0	.....	.....	.....	.....
Walton	4,511	.....	.....	.....	.....	.....	.....	.....
Delhi	3,000	5	20.00	0	.....	.....	.....	.....
Liberty	3,500	11	25.00	2	18.2	82.00	.....	.....
Rest of district .....	.....	203	14.25	39	14.5	155.00	.....	10
WEST CENTRAL DISTRICT								
Totals .....	.....	383	15.30	72	19.0	180.00	1	9
ALBURN	25,000	31	15.00	8	26.5	100.00	.....	1
ITHACA	18,490	20	17.85	6	40.0	350.00	.....	1
Hector	4,833	2	.....	1	.....	.....	.....	.....
Waterloo	4,850	7	24.00	0	.....	.....	.....	.....
Seneca Falls	6,500	6	11.00	0	.....	280.00	.....	1
GENEVA	10,000	.....	.....	.....	.....	.....	.....	.....
Canandaigua	5,868	9	18.20	2	24.0	230.00	.....	.....
Manchester	4,181	9	24.00	3	33.0	100.00	.....	.....
Phelps	5,150	8	19.00	1	12.5	250.00	.....	2
Penn Yan	4,254	9	24.00	1	11.0	.....	.....	.....
Batavia	7,221	10	16.60	2	20.0	.....	.....	.....
Danville	3,758	6	10.00	1	16.7	167.00	.....	.....
Le Roy	3,000	7	25.00	1	14.2	.....	.....	.....
Warsaw	4,700	7	23.50	1	14.2	.....	.....	.....
Rest of district .....	.....	252	14.80	43	18.0	200.00	1	5
LAKE ONTARIO AND WESTERN DISTRICT								
Totals .....	.....	294	14.05	336	22.5	166.00	4	25
BUFFALO	360,000	362	12.00	106	29.2	150.00	2	11
TONAWANDA	9,000	12	15.00	2	20.0	200.00	.....	.....
Amherst	4,000	9	24.00	1	11.0	110.00	.....	.....

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebrospinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT - (Continued)								
NORTH TONAWANDA	9,000	11	15.00	8	18.3	90.00	.....	.....
LOCEPORT	10,088	14	11.00	11	14.3	.....	.....	.....
NIAGARA FALLS	10,000	18	15.50	15	15.5	265.00	.....	1
Medina	4,500	3	8.00	2	8.0	230.00	.....	.....
Albion	4,886	8	8.00	1	33.0	330.00	.....	.....
Brockport	3,743	6	15.00	0	0	.....	.....	.....
ROCHESTER	175,000	178	13.25	48	37.0	190.00	1	5
Palmyra	4,173	3	9.00	1	33.0	.....	.....	.....
Newark	4,600	6	15.50	0	0	.....	.....	.....
Lyons	5,427	7	14.00	1	14.3	142.85	.....	.....
Clyde	3,000	3	8.00	1	50.0	.....	.....	.....
OWEGO	22,000	27	14.75	7	26.0	185.00	.....	2
Fulton	4,214	3	.....	3	.....	.....	.....	.....
Richland	3,637	5	15.00	1	20.0	300.00	.....	.....
Rest of district .....	.....	256	13.25	53	30.5	175.00	1	6
Totals for the state	9,632	.....	16.50	2,868	30.0	140.00	37	381
Average for Oct. for past 10 years	8,845	.....	16.50	3,731	30.8	170.00	38	340
Totals for September, 1898	11,431	.....	20.75	4,230	37.5	230.00	47	533

REMARKS.—During the month the mortality has decreased by nearly 3000 from the excessive mortality (under five years) is 1500 less than last month and 800 greater than a year ago. The per cent, last October. Compared with September, fewer deaths are reported from all zymotic have increased by 275 deaths, and there is a small increase in diseases of the urinary system, deaths from accident. Compared with the prevailing causes of mortality of a year ago, cases being lessened, diphtheria having caused 300 fewer deaths; the increase in the total mortality caused fewer deaths. Consumption caused the same number of deaths in each of the two. The decrease in mortality is uniform in all the sanitary districts. In rural towns (aggregated) mortality being nearly 10.0 per cent of the total against about 4.5 for the rest of the district, in three centres, (1) Belfast, Conesus, Canadea, Elmira; (2) McLean, DeRuyter, Cort. the current month. Cases are generally very mild, and mild, undetected cases have caused the month in New York city.

There was an excess above the normal in temperature of 3.5 degrees and an excess of rain—mean relative humidity was 77 per cent and the dew point 46°.

MONTHLY BULLETIN OF THE NEW
Abstract of reports of deaths and their causes in the following

[Cities are printed in SMALL CAPS, villages in *italics* and towns in **ROMAN**

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of -	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
MARITIME DISTRICT								
Totals		5,008	18.00	1,875	37.5	85.00	20	84
CITY OF NEW YORK								
Totals	3,438,662	4,695	16.63	1,806	38.0	86.50	30	82
BOROUGH OF MANHATTAN	1,911,765	2,554	16.85	741	38.0	75.00	14	38
BOROUGH OF THE BRONX	137,015	266	23.80	57	21.5	135.25	1	4
BOROUGH OF BROOKLYN	1,197,100	1,481	15.00	421	38.5	92.50	28	26
BOROUGH OF QUEENS	198,042	186	17.60	57	30.0	107.50	3	8
BOROUGH OF RICHMOND	64,927	108	20.00	33	30.0	90.00	2	1
Oyster Bay	15,600	18	14.40	8	11.0	85.00		
Hempstead	24,000	16	10.00	4	8.0	125.00		
North Hempstead	8,784	13	15.00	1	9.0			
Southold	7,571	9	13.50	1	11.0			
Sag Harbor	8,000	1		0				
Huntington	8,251	7	12.00	2	28.5			
Brookhaven	12,500	4		1				
YONKERS	40,000	50	15.00	10	20.0	20.00		
Greenburgh	12,000	11	13.00	3	23.0	150.00		
MOUNT VERNON	15,500	15	12.00	3	30.0	135.00		
Port Chester	7,547							
Sing Sing	9,500	5		1	20.0			
New Rochelle	5,317	12	17.75	4	33.3	330.00		1
Peekskill	9,675	17	21.00	1	6.0	130.00		
White Plains	4,042	7	21.00	2	4.8	235.00		
Rest of district		123	14.00	20	33.0	61.50		1
HUDSON VALLEY DISTRICT								
Totals		982	16.35	154	16.5	103.50	6	28
ALBANY	100,000	140	18.00	27	20.0	165.00	3	
COHEN	24,000	43	21.50	13	30.0	150.00	1	3
TROY	65,000	108	20.00	20	19.0	55.00		2
WATERVLIET	13,000	18	17.00	4	22.0			
Green Island	4,500	8	21.35	1	12.5	220.00		
Levinsburgh	10,550	20	22.50	4	20.0	200.00	1	
Hoosick Falls	7,014	12	20.50	3	25.0	130.00		
RAMSELER	7,462	7	12.00	3	43.8	235.00		
Coxsack	3,524	2	10.00	0				
Catskill	6,000	11	23.00	3	25.0			
HUDON	9,628	16	19.85	2	12.5	68.50		
KINGSTON	25,500	40	19.50	7	17.5	125.00	1	
Ellenville	3,000	8	24.00	1	16.7	165.00		
Marbottown	3,659	3	11.00	0				
Rosendale	6,125	6	10.00	0				
Esopus	6,035	9	21.50	2	23.3	200.00		
Saugerties	4,227	2		0				
POUGHKEEPS	23,200	20	15.00	4	17.0	85.00		
Piskill	11,726	7	8.00	0				
Wappinger Falls	3,718	4	13.00	1	25.0			
NEWBRO	24,536	27	13.00	4	13.5			
Port Jervis	9,327	5		1	20.0			
MILLTOWN	11,612	24	23.00	4	16.7	85.00		
Warwick	6,000	9	18.00	0				
Gloeba	4,546	3	20.50	0				

YORK STATE BOARD OF HEALTH

districts, cities, villages and towns during November, 1898

type. For boundaries of *Sanitary districts* see Annual summary]

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MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of —	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
HUDSON VALLEY DIST.—(Con.)								
Montgomery.....	5,859	12	20.00	1	8.3	165.00	.....	.....
Haverstraw.....	7,714	9	12.00	2	22.2	.....	.....	.....
Nyack.....	5,603	7	12.00	1	14.3	.....	.....	.....
Ramapo.....	6,600	2	3.00	1	50.0	.....	.....	.....
Rest of district.....	.....	323	14.00	47	13.5	95.00	.....	12
ADIRONDACK AND NORTHERN DISTRICT								
Totals.....	.....	388	18.35	76	19.6	92.00	3	11
WATERTOWN.....	17,000	20	14.15	2	15.0	50.00	.....	1
Ellisburgh.....	4,223	2	9.00	0	.....	.....	.....	.....
Cape Vincent.....	3,000	1	3.33	1	100.0	.....	.....	.....
Clayton.....	4,950	5	10.00	1	20.0	.....	.....	.....
Ogdensburg.....	12,000	18	15.00	6	33.3	55.00	1	.....
Gouverneur.....	6,000	9	15.00	1	11.0	110.00	.....	1
Potsdam.....	4,000	8	20.00	4	50.0	250.00	.....	1
Canton.....	6,012	11	18.00	1	9.0	.....	.....	.....
Malone.....	5,000	4	10.00	2	50.0	750.00	.....	.....
Plattsburgh.....	8,420	11	13.00	2	18.0	80.00	.....	.....
Glens Falls.....	10,000	16	16.00	3	18.0	50.00	.....	.....
Whitehall.....	4,434	1	2.25	0	.....	.....	.....	.....
Fort Edward.....	4,348	6	13.80	2	33.0	100.00	.....	.....
Kingsbury.....	5,112	10	19.00	2	20.0	125.00	.....	.....
Granville.....	5,281	10	19.00	2	20.0	.....	.....	.....
Greenwich.....	4,431	6	13.50	0	.....	.....	.....	.....
Lowville.....	4,000	4	10.00	1	25.0	250.00	.....	.....
Rest of district.....	.....	245	18.50	44	18.0	90.00	2	8
MOHAWK VALLEY DISTRICT								
Totals.....	.....	427	14.40	66	15.0	97.50	2	13
SCREENECTADY.....	24,374	28	14.00	5	17.0	105.00	1	.....
Cobleskill.....	2,426	5	11.50	1	20.0	.....	.....	.....
AMSTERDAM.....	12,542	27	17.50	5	18.5	250.00	.....	7
Fort Plain.....	3,000	1	3.33	0	.....	.....	.....	.....
JOHNSTOWN.....	7,766	9	11.70	3	33.3	322.00	.....	2
GLOVERSVILLE.....	14,694	23	15.70	6	25.0	.....	.....	.....
LITTLE FALLS.....	12,000	2	1.60	2	100.0	.....	.....	1
Herkimer.....	5,130	.....	.....	.....	.....	.....	.....	.....
Rhon.....	4,057	2	4.90	0	.....	.....	.....	.....
UTICA.....	55,000	73	13.00	9	12.0	35.00	.....	1
Whitestown.....	6,225	6	9.60	0	.....	100.00	.....	1
Rome.....	12,622	17	13.50	4	23.0	.....	.....	.....
Boonville.....	5,512	2	3.60	0	.....	.....	.....	.....
Camden.....	5,075	6	11.80	1	16.7	.....	.....	.....
Waterford.....	5,522	9	16.30	1	11.0	.....	.....	.....
Mechanicville.....	5,000	6	12.00	0	.....	900.00	.....	.....
Bailston Spa.....	2,527	2	7.90	0	.....	500.00	.....	1
Saratoga Springs.....	12,000	17	14.20	4	23.0	50.00	.....	.....
Rest of district.....	.....	187	13.00	26	13.9	75.00	1	5
SOUTHERN TIER DISTRICT								
Totals.....	.....	366	12.00	49	13.4	100.00	1	13
BINGHAMTON.....	24,514	46	18.00	8	17.5	340.00	.....	4
Oneida.....	6,000	7	11.70	2	33.0	425.00	.....	1
Candor.....	2,525	7	27.70	1	14.3	.....	.....	.....
Waverly.....	4,122	.....	.....	.....	.....	.....	.....	.....
ELMIRA.....	20,000	25	12.50	2	8.0	50.00	.....	1

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
SOUTHERN TIER DIST.—(Con.)								
Horseheads.....	8,819	4	13.00	0	.....	.....	.....	.....
HORNELLSVILLE.....	12,000	6	6.00	1	16.7	167.00	1	.....
Bath.....	8,261	1	.....	0	.....	.....	.....	.....
CORNING.....	10,025	16	19.03	3	18.5	165.00	.....	.....
Wellsville.....	5,083	4	10.00	1	25.0	250.00	.....	.....
OLEAN.....	8,000	9	18.50	2	22.0	.....	.....	.....
Salamanca.....	8,700	.....	.....	.....	.....	.....	.....	.....
DUNKIRK.....	13,200	12	11.50	4	33.3	250.00	.....	.....
JAMESTOWN.....	18,627	19	.....	5	.....	.....	.....	.....
Westfield.....	3,000	2	8.00	0	.....	.....	.....	.....
Fredonia.....	3,400	3	11.00	1	33.0	330.00	.....	.....
Rest of district.....	.....	224	13.25	18	8.5	55.00	.....	6
EAST CENTRAL DISTRICT								
Totals.....	.....	392	14.00	53	13.5	112.00	.....	14
SYRACUSE.....								
Baldwinsville.....	120,000	126	12.60	23	18.3	160.00	.....	5
De Witt.....	3,040	.....	.....	.....	.....	.....	.....	.....
Cortland.....	5,182	.....	.....	.....	.....	.....	.....	.....
Homer.....	8,600	10	14.00	0	.....	100.00	.....	1
Oneida.....	3,000	7	24.00	1	14.2	143.00	.....	1
Hamilton.....	6,063	2	.....	0	.....	.....	.....	.....
Cazenovia.....	4,110	5	15.00	1	20.0	.....	.....	.....
Brookfield.....	8,803	.....	.....	.....	.....	.....	.....	.....
Norwich.....	3,235	4	14.50	1	25.0	.....	.....	.....
Oneonta.....	6,000	6	12.00	0	.....	333.00	.....	1
Worcester.....	8,000	7	10.50	1	14.2	.....	.....	.....
Cooperstown.....	2,670	2	11.00	0	.....	.....	.....	.....
Walton.....	3,000	5	20.00	0	.....	.....	.....	.....
Delhi.....	4,811	.....	.....	.....	.....	.....	.....	.....
Liberty.....	3,000	4	16.00	0	.....	.....	.....	.....
Rest of district.....	3,500	4	14.00	1	25.0	500.00	.....	1
WEST CENTRAL DISTRICT								
Totals.....	.....	210	13.00	25	12.5	90.00	.....	5
LAKE ONTARIO AND WESTERN DISTRICT								
Totals.....	.....	338	13.50	29	9.0	56.00	.....	5
AUBURN.....	25,000	24	12.00	2	8.5	50.00	.....	.....
ITHACA.....	13,460	14	13.25	3	21.5	71.25	.....	.....
Hector.....	4,882	6	15.50	2	33.3	330.00	.....	.....
Waterloo.....	4,350	4	11.50	1	25.0	.....	.....	.....
Seneca Falls.....	4,350	4	11.50	1	25.0	.....	.....	.....
GENEVA.....	6,500	5	10.00	0	.....	.....	.....	.....
Canandaigua.....	10,000	16	19.23	2	12.5	125.00	.....	1
Manchester.....	5,868	2	.....	0	.....	.....	.....	.....
Phelps.....	4,181	7	20.00	1	14.2	.....	.....	.....
Penn Yan.....	5,150	2	.....	0	.....	.....	.....	.....
Batavia.....	4,254	6	16.75	0	.....	.....	.....	.....
Dansville.....	7,221	5	9.00	1	20.0	200.00	.....	1
Le Roy.....	3,758	7	24.00	1	14.2	.....	.....	.....
Warsaw.....	3,030	5	20.00	2	40.0	400.00	.....	.....
Rest of district.....	4,700	3	8.00	0	.....	.....	.....	.....
LAKE ONTARIO AND WESTERN DISTRICT								
Totals.....	.....	232	14.00	14	6	40.00	.....	3
LAKE ONTARIO AND WESTERN DISTRICT								
Totals.....	.....	337	13.50	166	20.0	85.00	4	17
BUFFALO.....	360,000	333	11.10	87	26.1	136.10	3	9
TONAWANDA.....	9,000	7	10.00	0	.....	.....	.....	.....
Amherst.....	4,000	4	12.00	1	25.0	.....	.....	.....

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT (Continued)								
NORTH TONAWANDA	9,000	3	.....	2	65.0	650.00	.....	.....
LOCKPORT	16,088	17	18.00	2	12.0	165.00	.....	.....
NIAGARA FALLS	18,000	18	18.50	6	32.3	110.00	.....	.....
Medina	4,500	6	15.00	0	.....	.....	.....	.....
Albion	4,535	5	13.00	1	30.0	900.00	.....	.....
Brockport	3,742	2	25.00	1	11.1	111.11	.....	.....
ROCHESTER	175,000	173	12.40	31	18.0	75.00	.....	.....
Palmyra	4,173	4	12.00	0	.....	.....	.....	.....
Newark	4,600	5	13.00	0	.....	.....	.....	.....
Lyons	6,127	4	8.00	0	.....	.....	.....	.....
Clyde	8,000	3	8.00	0	.....	.....	.....	.....
OSWEGO	22,000	25	18.55	5	20.0	80.00	.....	.....
Fulton	4,214	9	24.00	0	.....	100.00	.....	1
Richland	3,637	4	13.00	0	.....	.....	.....	.....
Rest of district .....	.....	200	12.50	30	14.5	68.00	1	3
Totals for the state .....	.....	8,700	15.75	1,970	29.7	90.00	26	190
Average for Nov for past 10 years .....	.....	8,080	16.00	2,345	28.0	145.00	30	190
Totals for October, 1898 .....	.....	9,632	16.50	2,886	30.0	.....	37	261

REMARKS.—The mortality reported this month is at the average daily rate for the state of month of last year; there were 400 more deaths than in November, 1897, when there were 900 deaths. The saving in mortality from last month is in zymotic diseases, which constitute diseases, which caused 500 fewer deaths, and typhoid fever, from which there were 90 fewer cases caused 250 more deaths, and there was an increase of 75 deaths in diseases of the circulatory system of early life would be lessened by 900 deaths. This is the month of lowest mortality in the year in which rate would have added 1900 deaths to the mortality of the month; the diarrheal and winter rate. Diphtheria has not shown the usual increase from October and caused less than the deaths from all causes, against the average for November of 14.5 per cent. The first death of the year, there have been 18 cases from a source distinct from that of the western part of the state; recently a case appeared in Almond, Allegany county, and one in Batavia; since average temperature during the month was 1° below the normal, winter weather with general wind variable but generally westerly.

MONTHLY BULLETIN OF THE NEW

Abstract of reports of deaths and causes in the following

[Cities are printed in SMALL CAPS, villages in italics and towns in Roman]

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of -	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
MARITIME DISTRICT								
Totals	5,451	21.00	1,610	24.6	67.50	23	57	
CITY OF NEW YORK								
Totals	3,488,899	6,001	20.55	1,524	25.4	66.85	23	54
BOROUGH OF MANHATTAN	1,917,755	3,342	20.55	921	27.5	75.09	21	26
BOROUGH OF THE BRONX	127,085	857	30.00	70	19.5	75.00	2	2
BOROUGH OF BROOKLYN	1,157,100	1,978	19.50	460	23.5	65.00	2	30
BOROUGH OF QUEENS	123,042	214	20.00	49	23.5	37.50	3	3
BOROUGH OF RICHMOND	64,927	110	20.50	24	22.0	65.00	1	1
Oyster Bay	15,000	32	25.00	5	15.0	150.00	1	1
Hempstead	24,000	39	16.50	6	19.0	15.00	1	1
Nor E. Hempstead	8,726	29	25.00	4	20.0	90.00	1	1
Southold	7,671	7	12.00	1	14.2	100.00	1	1
Sag Harbor	3,000	6	24.00	3	50.0	100.00	1	1
Huntington	8,253	17	14.00	0	0	100.00	1	1
Brookhaven	19,609	23	24.00	4	14.2	75.00	1	1
YONKERS	40,000	68	19.00	16	25.4	45.00	1	1
Greenburgh	19,000	36	25.00	3	18.2	180.00	1	1
MOUNT VERNON	15,518	24	16.50	6	25.0	60.00	1	1
Port Chester	7,547	1	13.00	1	13.0	100.00	1	1
Sing Sing	2,500	1	12.00	1	12.0	100.00	1	1
New Rochelle	8,217	18	25.00	8	45.0	400.00	1	1
Peekskill	2,675	15	18.00	4	30.0	65.00	1	1
White Plains	4,042	8	24.00	1	12.5	250.00	1	1
Rest of district	150	15.00	25	18.5	85.00	1	1	
HUDSON VALLEY DISTRICT								
Totals	1,123	20.60	175	15.7	75.00	4	34	
ALBANY	100,000	192	23.00	37	19.2	75.00	11	11
COBOS	24,000	46	23.00	9	20.0	210.00	1	1
TRAY	65,000	118	21.00	21	18.5	68.00	1	1
WATERVLIET	13,000	20	18.00	4	20.0	800.00	1	1
Green Island	4,500	6	16.00	2	33.0	165.00	1	1
Lansingburgh	10,560	20	20.00	6	30.0	100.00	1	1
Huonick Falls	7,014	7	12.00	0	0	142.00	1	1
RENSSELAER	2,484	14	22.00	5	35.0	80.00	1	1
COXSACK	3,524	3	10.00	0	0	100.00	1	1
Catskill	5,000	8	14.50	1	16.7	100.00	1	1
HUDSON	9,623	20	25.00	4	20.0	50.00	1	1
KINGSTON	2,500	45	21.50	5	17.4	95.00	1	1
Ellenville	3,000	2	8.00	1	50.0	500.00	1	1
Marbletown	3,089	8	25.00	1	12.5	250.00	1	1
Rosendale	6,125	7	14.00	2	28.6	285.00	1	1
Esopus	5,065	9	21.00	4	44.4	100.00	1	1
Saugerties	4,297	8	23.00	3	37.5	100.00	1	1
POUGHKEEPSIE	23,300	40	21.00	5	18.5	50.00	1	1
Wishkill	11,736	19	30.00	2	10.5	100.00	1	1
Wappinger Falls	3,718	1	10.00	0	0	100.00	1	1
NEWBURGH	24,536	38	16.00	5	15.0	30.00	1	1
Port Jervis	9,327	1	10.00	0	0	100.00	1	1
MIDDLETOWN	11,612	25	25.00	7	28.0	160.00	1	1
Warwick	6,000	12	24.00	3	25.0	100.00	1	1
Goshen	4,616	6	20.00	3	37.5	100.00	1	1

MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
HUDSON VALLEY DIST. — (Con.)								
Montgomery.....	5,350	18	35.00	9	16.3	83.50	....	1
Haverstraw.....	7,714	14	22.00	5	25.7	....	....	....
Nyack.....	5,801	5	12.00	1	20.0	....	....	....
Ramapo.....	5,600	8	14.55	2	27.5	....	....	....
Rest of district.....	....	409	7.00	23	9.0	80.00	2	7
ADIRONDACK AND NORTHERN DISTRICT								
Totals.....	....	443	15.20	■	17.5	83.00	1	10
WATERTOWN.....	17,006	27	19.00	5	24.0	75.00	....	1
Ellisburgh.....	4,232	3	9.00	0	....	....	....	....
Cape Vincent.....	3,000	3	12.00	0	....	500.00	....	....
Clayton.....	4,250	11	25.00	1	9.0	90.00	....	1
OGDENSBURG.....	12,000	13	18.00	5	45.0	....	....	....
Gouverneur.....	5,000	7	14.00	1	14.0	....	....	....
Potsdam.....	4,000	4	12.00	1	25.0	250.00	....	1
Canton.....	5,018	10	20.00	2	20.0	....	....	....
Malone.....	5,000	7	17.00	5	70.0	....	....	....
Plattsburgh.....	6,480	9	18.00	2	22.0	110.00	....	1
Glens Falls.....	10,000	20	24.00	5	25.0	100.00	....	....
Whitchell.....	4,484	6	21.25	1	12.5	125.00	....	....
Fort Edward.....	4,382	14	25.00	2	14.2	70.00	....	....
Kingsbury.....	5,112	3	....	1	....	....	....	....
Granville.....	5,281	3	....	1	33.0	....	....	....
Greenwich.....	4,431	9	24.00	1	11.0	....	....	....
Lowville.....	4,000	6	18.00	1	16.7	....	....	....
Rest of district.....	....	268	13.00	42	15.5	87.50	1	6
MOHAWK VALLEY DISTRICT								
Totals.....	....	565	19.00	69	12.5	75.00	3	14
SCHENECTADY.....	24,374	45	22.00	12	26.0	65.00	....	1
Cobleskill.....	3,438	6	21.30	0	....	....	....	....
AMSTERDAM.....	18,541	25	22.65	5	14.2	142.85	1	3
Fort Plain.....	3,000	2	8.00	0	....	....	....	....
JOHNSTOWN.....	7,768	17	25.00	2	12.0	....	....	....
GLOVERSVILLE.....	14,604	24	19.60	1	5.0	85.60	....	1
LITTLE FALLS.....	12,000	10	11.00	1	10.0	900.00	....	1
Herkimer.....	5,150	15	24.00	1	7.0	....	....	....
Rion.....	4,067	6	18.00	1	17.0	....	....	....
UTICA.....	55,000	92	20.00	12	14.0	85.00	....	1
Whitestown.....	5,225	15	26.00	1	7.0	200.00	....	2
Rome.....	13,638	20	17.60	1	5.0	100.00	1	1
Boonville.....	3,512	4	14.00	1	25.0	....	....	....
Camden.....	3,675	6	19.20	0	....	....	....	....
Waterford.....	5,522	15	25.00	2	11.1	85.00	....	....
Mechanicville.....	3,000	2	20.00	2	25.0	125.00	....	....
Ballston Spa.....	3,527	5	17.00	1	20.0	....	....	....
Saratoga Springs.....	12,000	■	22.00	2	12.5	90.00	....	....
Rest of district.....	....	217	13.00	26	11.0	75.00	....	4
SOUTHERN TIER DISTRICT								
Totals.....	....	807	15.45	72	14.5	90.00	....	10
BINGHAMTON.....	54,514	58	20.5	5	15.0	75.00	....	2
Oneida.....	5,000	5	10.00	0	....	....	....	....
Candor.....	3,536	8	25.00	1	12.5	135.00	....	....
Waverly.....	4,122	5	15.00	0	....	....	....	....
ELMIRA.....	20,000	24	12.00	6	12.0	60.00	....	1

MONTHLY BULLETIN

SANITARY DISTRICTS.							
	Population	Total number of deaths	Representing annual death per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis Typhoid fever
SOUTHERN TIER DIST.—(Con.)							
Horseheads	8,819	10	30.00	3	30.0		
HORNELLVILLE	12,000	17	17.00	5	29.0	180.00	
Bath	8,261	6	23.03	0			
Corning	10,005	17	30.00	6	35.0	300.00	
Wellsville	5,088	4	10.00	0			
OLPAN	8,000	7	11.00	0			
Salamanea	8,700						
DUNKIRK	18,800	11	10.03	3	29.0	90.00	
JAMESTOWN	18,627	17	11.00	3	18.0	175.00	1
Westfield	8,000	6	24.00	1	16.7		
Fredonia	8,400	9	8.00	0			
Rest of district		300	15.00	39	18.0	100.00	6
EAST CENTRAL DISTRICT							
Totals		461	16.00	55	19.5	80.00	10
SYRACUSE	120,000	134	18.40	18	12.0	75.00	5
Baldwinsville	8,040	2	8.00	0			
De Witt	5,182	8	0.00	0			
Cortland	8,000	9	18.00	4	48.0	110.00	1
Homer	8,000						
Oneida	6,088	11	22.00	2	18.2		
Hamilton	4,110	3	10.00	0			
Cazenovia	2,803	10	25.00	0			
Brookfield	8,235	5	18.00	0			
Norwich	6,000	7	14.00	1	14.0	142.00	
Onondaga	8,000	11	16.50	2	19.0		
Worcester	2,870	3	18.00	0			
Coopersstown	8,000	5	12.00	0			
Walton	4,811	3	10.00	0		650.00	1
Delhi	9,000	7	25.00	0			
Liberty	3,500	4	18.00	1	25.0	250.00	
Rest of district		246	14.00	30	18.0	52.00	5
WEST CENTRAL DISTRICT							
Totals		374	15.00	40	10.5	45.00	5
AUBURN	25,000	39	18.00	5	12.0	50.00	
ITHACA	18,363	16	11.27	3	19.0		
Hector	4,842	3	0	0			
Watertown	4,350	5	15.75	0			
Seneca Falls	6,600	12	22.20	0			
ORISKANY	10,000	2		1			
Cayuga	5,468	7	14.20	2	28.5		
Manchester	4,181	5	15.00	0			
Phelps	5,180	4	10.00	0			
Penn Yan	4,254	7	20.40	1	14.2		
Ellettsburg	7,221	7	12.00	1	14.2		
Danville	8,758	4	19.50	1	25.0		
Le Roy	3,000	6	24.00	0			
Warsaw	4,700	3	9.00	0			
Rest of district		234	15.00	56	10.3	60.00	1

763

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MONTHLY BULLETIN

SANITARY DISTRICTS	Population	Total number of deaths	Representing annual death rate per 1000 population of—	Deaths under five years	Percentage of deaths under five years to total deaths	Zymotic deaths per 1000 deaths from all causes	Cerebro-spinal meningitis	Typhoid fever
LAKE ONTARIO AND WESTERN DISTRICT								
Totals.....		263	15.50	105	17.5	70.00	5	14
BUFFALO.....	260,000	268	12.97	80	31.8	87.50	2	9
TONAWANDA.....	9,000	8	8.00	1	12.5	250.00		
Amherst.....	4,000	4	12.00	1	25.0	250.00		
NORTH TONAWANDA.....	9,000	10	13.95	4	40.0	100.00		
LOCKPORT.....	16,088	18	15.80	9	56.0	183.00		
NIAGARA FALLS.....	16,000	20	15.00	6	30.0	150.00	1	
Medina.....	4,300							
Albion.....	4,636	6	15.80	1	16.7			
Brockport.....	8,748	8	12.00	2	25.0			
ROCHESTER.....	175,000		12.41	24	13.5	67.00		1
Palmyra.....	4,174	6	18.00	0				
Newark.....	4,600	6	20.50	0				
Lyons.....	6,127	10	19.50	1	10.0			
Clyde.....	3,000	2	15.00	0				
Oswego.....	24,000	31	17.00	5	16.0	98.00		
Fulton.....	4,314	2	22.50	2	25.0			
Richland.....	3,687	4	15.00	0		250.00		1
Rest of district.....		267	15.66	41	15.7	87.50	1	2
Totals for the state.....		10,877	19.00	2,299	31.0	70.00	25	136
Average for Dec. for past 10 years.....		9,400	17.00	2,591	35.0	131.55	32	150
Totals for Nov., 1898.....		8,709	15.75	1,970	22.7	90.00	26	129

REMARKS.—There was an average daily mortality during December of 250, against 200 in the average daily mortality for the entire year was 230, against 20 in 1897. The number of daily deaths is no increase over last month and no material variation in the deaths from any puerperal diseases, cancer and violence, all other causes of death have increased mortalities. Diseases of the urinary, circulatory and nervous systems, 100 more from old age and 400 more little in mortality, being somewhat less, but there were 700 more deaths from acute respiratory from unclassified causes. Grippe became epidemic during the month and may be estimated increased above the normal the mortalities mentioned. The infant mortality is excessive for probably to inflammatory intestinal sequences of grippe. Consumption also has an excessive are no noteworthy variations from the normal in other zymotic causes of death. Cases of Fenfield, Mendon, Clarkson and Brockport, in Monroe county, continuing in the city of the month was 1° below the normal, generally a lowest temperature of from -3° to -34° being tation was near the average, and the mean relative humidity 75%.

SUMMARY OF MORTALITY OF THE STATE OF NEW YORK FOR THE YEAR 1898, AS PUBLISHED IN THE MONTHLY BULLETIN
TOTALS OF MORTALITY OF THE STATE BY MONTHS

1898	Total number of deaths.	Representing annual death rate per 1000 population of—	Deaths under five years.	Percentage of deaths under five years to total deaths.	Zymotic deaths per 1000 deaths from all causes.	Cerebro-spinal meningitis.	Typhoid fever.	Malarial disease.	Smallpox.	Scarlet fever.	Measles.	Dysentery.	Whooping cough.
JANUARY	9,832	17.00	2,416	26.0	85.50	84	122	26	.....	123	112	21	44
FEBRUARY	9,213	17.60	2,543	27.5	81.50	53	104	29	.....	94	94	23	47
MARCH	10,800	18.25	2,860	26.0	94.25	75	119	26	.....	108	144	24	86
APRIL	10,000	18.15	2,765	26.0	93.85	83	80	28	.....	84	126	20	115
MAY	9,749	17.15	2,690	27.0	93.00	81	96	27	.....	112	108	20	114
JUNE	8,627	16.00	2,346	26.0	122.50	109	70	22	.....	82	98	17	111
JULY	11,441	20.60	4,945	43.0	265.65	69	99	24	.....	89	82	13	178
AUGUST	11,302	20.60	4,811	42.5	255.00	40	181	49	.....	96	74	16	168
SEPTEMBER	11,481	20.75	4,350	37.5	350.00	47	338	82	.....	26	20	6	120
OCTOBER	9,682	18.50	2,868	30.0	140.00	87	291	49	.....	36	10	14	56
NOVEMBER	8,708	16.75	1,970	22.7	90.00	96	198	20	.....	1	19	17	52
DECEMBER	10,877	19.00	2,349	21.0	70.00	26	154	23	.....	63	29	18	59
Totals for the year.....	180,972	19.10	57,313	30.2	154.16	695	1,810	404	1	387	538	267	1,155
Average for past 10 years.....	117,683	18.26	59,970	33.5	177.60	563	1,816	544	97	1,611	1,086	280	1,041
Totals for 1897.....	117,078	18.40	55,771	32.6	140.90	638	1,851	520	37	841	873	292	935

TOTALS OF MORTALITY OF THE STATE BY MONTHS—(Continued).

1898	Group and diphtheria.	Diarrheal diseases.	Acute respiratory diseases.	Consumption.	Feverish diseases.	Diseases of digestive system (not diarrheal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
January.....	323	113	1,765	1,051	91	642	739	1,011	1,023	344	400	467	1,168
February.....	275	119	1,738	1,031	75	673	754	703	1,133	309	337	493	1,098
March.....	281	123	1,872	1,146	89	713	810	801	1,251	322	430	511	1,196
April.....	253	137	1,869	1,100	91	671	733	684	1,213	333	435	481	1,300
May.....	223	137	1,576	1,127	64	695	737	913	1,171	375	473	449	1,193
June.....	174	372	637	1,077	96	735	656	790	1,001	347	531	531	1,069
July.....	159	2,298	710	1,116	67	1,344	646	763	1,113	330	733	333	1,279
August.....	124	2,345	613	1,019	67	1,339	531	749	1,043	390	708	430	1,349
September.....	135	1,872	763	1,076	79	1,123	647	856	1,116	373	527	473	1,303
October.....	130	637	1,044	1,053	85	943	673	849	1,015	373	535	443	1,338
November.....	243	165	1,388	1,049	54	635	631	913	993	330	436	431	1,077
December.....	244	141	2,250	1,185	71	637	845	1,091	1,177	369	479	533	1,435
Totals for the year.....	2,613	8,499	18,330	13,979	990	10,101	8,641	10,511	13,313	4,305	6,130	5,334	14,441
Average for past 10 years.....	3,460	8,705	17,333	13,087	952	8,213	6,331	8,467	13,447	3,370	5,339	4,019	14,333
Totals for 1897.....	4,115	7,367	16,372	12,441	1,013	8,943	7,396	10,905	13,134	4,131	6,172	5,316	14,900

TOTALS OF MORTALITY IN THE SANITARY DISTRICTS FOR THE YEAR

DISTRICTS	Total number of deaths.	Representing annual death rate per 1000 of—	Deaths under five years.	Percentage of deaths under five years to total deaths.	Zymotic deaths per 1000 deaths from all causes.	Cerebro-spinal meningitis.	Typhoid fever.	Malarial diseases.	Small pox.	Scarlet fever.	Measles.	Dysentery.	Whooping cough.
Maritime	71,286	20.00	26,903	37.5	145.00	401	724	268	1	727	330	180	108
St. Lawrence Valley	11,776	17.05	2,574	22.0	120.50	98	363	40	...	26	17	19	105
Adirondack and Northern	5,157	14.75	964	19.0	100.00	27	122	6	...	3	30	9	49
Mohawk Valley	8,933	16.50	1,133	20.0	120.00	40	138	4	...	10	34	13	30
Southern Tier	5,453	14.00	691	17.0	115.35	16	112	18	...	16	26	11	36
East Central	6,745	16.00	1,019	18.5	111.10	15	123	14	...	22	26	13	21
West Central	4,243	14.35	610	16.0	80.35	9	86	11	...	7	10	7	26
Lake Ontario and Western	10,546	18.35	2,822	27.0	137.00	69	264	15	...	27	7	16	97

TOTALS OF MORTALITY IN THE SANITARY DISTRICTS FOR THE YEAR—(Continued).

DISTRICTS.	Croup and diphtheria.	Diarrheal diseases.	Acute respiratory diseases.	Consumption.	Puerperal diseases.	Diseases of digestive system (not diarrheal).	Diseases of urinary system.	Diseases of circulatory system.	Diseases of nervous system.	Cancer.	Accidents and violence.	Old age.	Unclassified.
Maritime	1,756	5,285	10,667	8,191	533	6,314	5,365	5,020	6,870	2,176	2,901	1,417	10,298
Halifax Valley	212	714	1,492	1,258	83	627	773	1,264	1,719	419	578	796	1,025
Adirondack and Northern	59	307	551	381	55	456	304	567	678	212	299	502	462
Mohawk Valley	89	382	591	606	42	427	408	617	823	264	305	423	541
Southern Tier	72	327	843	401	45	414	386	648	730	283	333	546	462
East Central	91	309	615	519	26	461	381	707	761	300	310	536	491
West Central	24	219	431	584	53	373	323	530	605	218	216	431	341
Lake Ontario ■ Western	179	956	1,364	1,088	108	814	749	1,173	1,549	590	634	830	1,017

SUMMARY OF MORTALITY, ETC.—(Continued)

DISTRICTS	FROM TYPHOID FEVER.						FROM DIPHTHERIA.					
	1893	1894	1895	1896	1897	1898	1893	1894	1895	1896	1897	1898
In each 1000 deaths there were in the—												
Maritime	8.75	8.00	7.60	7.60	8.00	10.25	51.14	71.27	51.58	45.00	42.60	21.20
Hudson Valley	23.65	22.50	33.00	33.35	21.00	28.00	41.63	31.28	28.00	26.75	27.75	18.50
Adirondack and Northern.....	20.40	22.50	25.35	26.20	19.25	23.50	40.68	27.73	18.52	27.20	25.10	11.40
Mohawk Valley	21.45	20.83	19.56	13.00	17.15	22.00	38.00	28.00	11.20	15.10	19.50	15.00
Southern Tier	21.75	26.54	26.65	32.00	14.35	20.50	60.68	39.50	20.75	15.50	17.50	13.20
East Central.....	18.23	22.22	19.75	17.60	12.15	21.50	46.78	30.65	13.10	20.65	22.00	16.00
West Central	15.90	16.75	10.50	13.50	10.35	9.50	43.85	16.70	14.00	10.00	13.50	6.00
Lake Ontario and Western	21.04	25.15	19.75	16.00	16.50	21.50	39.88	40.25	39.45	40.00	34.30	16.50
The entire state.....	13.51	13.87	14.10	12.75	11.55	15.00	48.00	55.77	41.00	38.00	35.15	21.50

SUMMARY OF MORTALITY, ETC.—(Concluded)

DISTRICTS	FROM DIARRHOEAL DISEASES.						FROM CONSUMPTION.					
	1893	1894	1895	1896	1897	1898	1893	1894	1895	1896	1897	1898
In each 1000 deaths there were in the—												
Maritime	80.00	80.00	90.75	71.50	70.10	74.00	111.30	110.00	112.00	110.00	106.50	115.00
Hudson Valley	56.67	63.15	63.10	72.40	51.75	60.00	102.20	111.20	107.00	115.00	111.60	115.00
Adirondack and Northern.....	42.65	57.50	53.00	53.25	45.75	60.00	103.25	115.00	114.50	116.50	103.50	112.00
Mohawk Valley	53.26	65.00	55.41	60.35	43.60	65.00	102.50	111.50	113.45	104.50	95.20	106.00
Southern Tier.....	50.00	57.30	50.34	50.00	39.00	60.00	77.00	81.00	86.00	86.50	75.00	75.00
East Central.....	49.13	64.00	55.92	62.50	39.50	54.00	98.00	103.25	98.50	93.50	96.50	90.00
West Central....	37.90	40.82	45.60	53.60	31.50	52.00	105.92	118.50	99.50	90.20	90.10	90.00
Lake Ontario and Western	97.95	103.80	99.50	93.50	76.00	90.00	98.25	102.75	105.00	101.50	95.00	100.00
The entire state	73.90	75.77	74.50	72.70	62.50	70.00	105.94	103.46	109.00	110.00	103.00	107.50

REMARKS.—There have been reported in the Monthly bulletin during the year 120,972 deaths; this is 3,891 more than in 1897, which was a year of unusually low mortality, and is about the average of seven preceding years. The delayed returns, not reported in the Bulletin, numbered 738, making the death rate per thousand population 13.10, the average of the past 10 years being 13.25. The death rate of the Maritime district was 20.00 against 18.90 in 1897, there having been about 3500 more deaths; of the other districts, there is no material variance from the rate of last year. Last year the saving in mortality was in the metropolis.

The infant mortality (under five years) was greater by 2300 than in 1897, though relatively decreased, constituting 30.3 per cent of the total, against 32.5 last year, and an average of 33.5. The zymotic mortality constituted 13.6 per cent of the total, against 14.0 last year, and an average of 17.5. The decrease is confined to the urban communities, some of the rural districts showing a relative increase over last year.

Among zymotic diseases there was an increase in the mortality from cerebro-spinal meningitis in all but the Central districts; in typhoid fever in all parts of the state including the metropolis, amounting to about 450 deaths; in whooping-cough by 300 deaths, the increase being limited to the Eastern districts; and an increase (by 1500) in diarrheal mortality from last year, though not beyond the average. Diphtheria caused 2620 deaths, the fewest of any year on record, being less by 1500 than in 1897 and less than half the average yearly mortality from this cause. Consumption caused 13,000 deaths, which is with slight variation the mortality of every year. There were 2500 deaths from grippe, which is less than the mortality of either of the eight preceding annual epidemics. Acute respiratory diseases had the average rate of mortality, that of other local diseases showed a moderate increase. The mean average temperature for the year was 48.5 degrees or 1 degree above the normal, and the total rainfall (average of state) 44.5 inches, or 4 inches above the normal.

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